DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[FWS–R1–ES–2011–0112; 4500030114]

RIN 1018–AX69

Endangered and Threatened Wildlife and Plants; Designation of Revised Critical Habitat for the Northern Spotted Owl

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service, designate revised critical habitat for the northern spotted owl (*Strix occidentalis caurina*) under the Endangered Species Act. In total, approximately 9,577,969 acres (ac) (3,876,064 hectares (ha)) in 11 units and 60 subunits in California, Oregon, and Washington fall within the boundaries of the critical habitat designation.

DATES: The rule becomes effective on January 3, 2013.

ADDRESSES: The final rule and the associated economic analysis and environmental assessment are available on the Internet at *http://www.regulations.gov* at Docket No. FWS–R1–ES–2011–0112. Comments and materials received, as well as supporting documentation used in preparing this final rule, are available for public inspection, by appointment, during normal business hours, at the U.S. Fish and Wildlife Service, Oregon Fish and Wildlife Office, 2600 SE. 98th Ave., Suite 100, Portland, OR 97266; telephone 503–231–6179; facsimile 503–231–6195.

The coordinates or plot points or both from which the maps are generated are included in the administrative record for this critical habitat designation and are available at *http://www.fws.gov/oregonfwo,* at *http://www.regulations.gov* at Docket No. FWS–R1–ES–2011–0112, and at the Oregon Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**). The additional tools and supporting information that we developed for this critical habitat designation are available at the Fish and Wildlife Service Web site and Field Office set out above and at *http://www.regulations.gov.*

FOR FURTHER INFORMATION CONTACT: Paul Henson, Field Supervisor, U.S. Fish and Wildlife Service, Oregon Fish and Wildlife Office, 2600 SE. 98th Ave., Suite 100, Portland, OR 97266; telephone 503–231–6179; facsimile 503–231–6195. If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Organization of the Final Rule

This final rule describes the revised critical habitat designation for the northern spotted owl under the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 *et seq.*). The pages that follow summarize the comments and information received in response to the proposed designation published on March 8, 2012 (77 FR 14062), and in response to the notice of availability of the draft economic analysis and draft environmental assessment of the proposed revised designation published on June 1, 2012 (77 FR 32483), describe any changes from the proposed rule, and detail the final designation for the northern spotted owl. To assist the reader, the content of the document is organized as follows:

I. Executive Summary

Why we need to publish a rule. This is a final rule to designate revised critical habitat for the northern spotted owl. Under the Endangered Species Act of 1973, as amended (Act), designations and revisions of critical habitat can only be completed through rulemaking.

We, the U.S. Fish and Wildlife Service (Service), listed the northern spotted owl as threatened on June 26, 1990 (55 FR 26114), because of widespread loss of habitat across its range and the inadequacy of existing regulatory mechanisms to conserve it. We previously designated critical habitat for the northern spotted owl in 1992 and 2008. The 2008 designation (73 FR 47326, August 13, 2008) was subsequently challenged in court. In July 2009, the Federal Government requested voluntary remand of the 2008 revised critical habitat designation. On March 8, 2012, we published in the **Federal Register** a revised proposed critical habitat designation for the northern spotted owl (77 FR 14062). This rule complies with the court-ordered deadline to submit a final revised critical habitat rule for the northern spotted owl to the **Federal Register** by November 21, 2012.

Section 4(b)(2) of the Act states that the Secretary shall designate critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The critical habitat areas we are designating in this rule constitute our current best assessment of the areas that meet the

definition of critical habitat for the northern spotted owl.

The rule revises our designation of critical habitat in Washington, Oregon, and California. Consistent with the best scientific data available, the standards of the Act and our regulations, we are designating 9,577,969 ac (3,876,064 ha) in 11 units and 60 subunits in California, Oregon, and Washington that meet the definition of critical habitat. The approximate totals by State and comparison to previous designations are outlined below, as follows (note some units and subunits overlap State boundaries; therefore, totals do not add up to 11 units and 60 subunits):

- Approximately 2,918,067 ac (1,180,898 ha) in 4 units and 26 subunits in Washington.
- Approximately 4,557,852 ac (1,844,496 ha) in 8 units and 58 subunits in Oregon.
- Approximately 2,102,050 ac (850,669 ha) in 5 units and 36 subunits in California.
- This designation increases previously designated critical habitat, including the addition of 272,026 ac (110,085 ha) ac of State lands. However, this final critical habitat designation is a decrease from the 13,962,449 ac (5,649,660 ha) identified as meeting the definition of critical habitat in the March 8, 2012 (77 FR 14062) proposed rule.
- We have also excluded areas of State and private land from this designation of critical habitat under section 4(b)(2) of the Act, as explained in the Exclusions section of this rule.

The Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011; hereafter ''Revised Recovery Plan'') recommends that land managers: (1) conserve older forest, high-value habitat, and areas occupied by northern spotted owls; and (2) actively manage forests to restore ecosystem health in many parts of the species' range. In developing this critical habitat designation, we also recognize the importance of the Northwest Forest Plan (NWFP) and its land management strategy for conservation of native species associated with old-growth and late-successional forest, including the northern spotted owl. The designation of areas as critical habitat does not change land use allocations or Standards and Guidelines for management under the NWFP, nor does this rule establish any management plan or prescriptions for the management of critical habitat. However, we encourage land managers to consider implementation of forest management practices recommended in the Revised Recovery Plan to restore natural ecological processes where they have been disrupted or suppressed (*e.g.,* natural fire regimes), and application of ''ecological forestry'' management practices (e.g., Gustafsson *et al.* 2012, entire; Franklin *et al.* 2007, entire; Kuuluvian and Grenfell *et al.* 2012 entire) within critical habitat to reduce the potential for adverse impacts associated with commercial timber harvest when such harvest is planned within or adjacent to critical habitat. In sum, the Service encourages land managers to consider the conservation of existing high-quality northern spotted owl habitat, the restoration of forest ecosystem health, and the ecological forestry management practices recommended in the Revised Recovery Plan that are compatible with both the goals of northern spotted owl recovery and Standards and Guidelines of the NWFP.

The basis for our action. This final critical habitat designation is based on the current status and recent scientific research on northern spotted owl populations. We used the best scientific information available to identify those specific areas within the geographical area occupied by the species at the time it was listed on which are found those physical or biological features essential to the conservation of the species, and which may require special management considerations or protection. For the northern spotted owl, these features include particular forest types that are used or likely to be used by northern spotted owls for nesting, roosting, foraging, or dispersing habitat. In addition, we used the best available information to identify those areas that are otherwise determined to be essential to the conservation of the species.

We relied on the recovery criteria set forth in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) to determine what is essential to the conservation of the species; therefore we have identified a habitat network that meets the following criteria:

- Ensures sufficient habitat to support stable, healthy populations across the range, and also within each of the 11 recovery units;
- Ensures distribution of northern spotted owl populations across the range of habitat conditions used by the species;
- Incorporates uncertainty, including potential effects of barred owls, climate change, and wildfire disturbance risk; and
- Recognizes that these protections are meant to work in concert with other recovery actions, such as barred owl management.

To assist us in determining critical habitat, we integrated habitat and demographic information (relating to occupancy, survival, reproduction, and movement) to develop a modeling tool that assesses the distribution of habitat quality and population dynamics across the range, and provides a more accurate picture of where high-quality northern spotted owl habitat exists. This model synthesized more than 20 years of data from on-the-ground demographic surveys, and allowed for analysis of how northern spotted owl populations would fare under different habitat conservation scenarios. We determined what is essential to recovery of the northern spotted owl by evaluating the performance of each potential critical habitat scenario considered against the recovery needs of the owl.

Peer reviewers support our methods. We solicited expert opinions from knowledgeable individuals with scientific expertise that included familiarity with the species, the geographic region in which the species occurs, and conservation biology principles. These peer reviewers generally concurred with our methods and conclusions and provided additional information, clarifications, and suggestions to improve this final rule.

Consistency with Presidential Directive. On February 28, 2012, the President issued a memorandum to the Secretary of the Interior regarding the proposed revised critical habitat for the northern spotted owl, specifically on minimizing regulatory burdens. The Service has fully addressed each of the directives in this memo and has taken steps to comply with this directive, including:

- We conducted and completed, as is the Service's normal practice, an economic analysis on the probable impacts of the proposed revised critical habitat.
- We provided a description of ecological forestry management actions that may be compatible with both northern spotted owl recovery and timber harvest, as recommended in the Revised Recovery Plan for the Northern Spotted Owl. This discussion appears in the following sections of this rule:
  - An Ecosystem-based Approach to the Conservation of the Northern Spotted Owl and Managing Its Critical Habitat
  - Special Management Considerations or Protection
  - Determination of Adverse Effects and Application of the ''Adverse

Modification'' Standard.

We note, however, that this discussion of ecological forestry is provided to Federal, State, local and private land managers, as well as the public, for their consideration as they make decisions on the management of forest land under their jurisdictions and through their normal processes. This critical habitat rule itself does not take any action or adopt any policy, plan, or program in relation to active forest management.

- As per the Service's normal practice, we solicited public review and comment on this rulemaking action, using information thus gained to correct and refine our designation.
- We fully considered exclusion of private lands and State lands from the final revised critical habitat, consistent with the best available scientific and commercial information.

The Service appreciates, and is sensitive to, the potential for regulatory burden that may result from our designation of critical habitat for the northern spotted owl under the Act. Our analysis indicated that the revision of critical habitat could have relatively little incremental effect above and beyond the conservation measures already required as a result of its threatened species status under the Act, and thus is not expected to impose substantial additional regulatory burdens. The Service appreciates, and relies on the many partners we have in conservation, including private landowners, Tribes, States, and local governments, and strongly desires to promote conservation partnerships to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.

Costs and benefits. In order to identify and analyze the potential economic impacts of the designation of critical habitat for the northern spotted owl, we worked with a contractor to draft an economic analysis report, which was released in May of 2012 and finalized following consideration and incorporation of public comment. The report looked at a variety of economic activities including timber harvest, wildlife management, road construction, and other forest management activities, but focused primarily on timber management. It concludes that only a relatively small portion of the overall proposed revised designation may result in more than minor incremental administrative costs. It found that potential incremental changes in timber harvests on Bureau of Land Management and U.S. Forest Service lands may occur on approximately 1,449,534 ac (585,612 ha) proposed for designation, or 10 percent of the total lands included in the proposed designation and that there is the potential for 307,308 ac (123,364 ha) of private land to experience incremental changes in harvests, or approximately 2 percent of total lands proposed. No incremental changes in harvests are expected on State lands.

II. Background

It is our intent to discuss only those topics directly relevant to the revised designation of critical habitat in this rule. For further details regarding northern spotted owl biology and habitat, population abundance and trend, distribution, demographic features, habitat use and conditions, threats, and conservation measures, please see the Northern Spotted Owl 5-year Review Summary and Evaluation, completed October 26, 2011, and the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011), completed July 1, 2011. Both of these documents are available on the U.S. Fish and Wildlife Service's Endangered Species Web site at *http://ecos.fws.gov/;* under ''Species Search,'' enter ''northern spotted owl.'' As detailed below, Appendix C of the Revised Recovery Plan is particularly informative, as we used the habitat modeling process it describes as a tool to help identify areas containing the essential physical and biological features or areas that were otherwise essential to the conservation of the northern spotted owl in this revised designation of critical habitat. Furthermore, the recovery criteria for the northern spotted owl, as described in the Revised Recovery Plan (USFWS 2011, pp. I–1 to I–2), helped to discriminate between the various scenarios considered in the modeling process in terms of assessing which of the habitat networks evaluated included what is essential to the conservation of the northern spotted owl in the most efficient configuration possible.

Introduction

The northern spotted owl inhabits structurally complex forests from southwestern British Columbia through Washington and Oregon to northern California. The northern spotted owl was listed under the Act as a threatened species in 1990 because of widespread loss of habitat across its range and the inadequacy of existing regulatory mechanisms to conserve it (55 FR 26114; June 26, 1990). Although the rate of loss of habitat due to timber harvest has been reduced on Federal lands over the past two decades, both past and current habitat loss remain a threat to the northern spotted owl. Despite implementation of habitat conservation measures in the early 1990s, Thomas *et al.* (1990, p. 5) and USDI (1992, Appendix C) foresaw that owl populations would continue to decline for several decades, even with habitat conservation, as the consequence of lag effects at both individual and population levels. However, many populations of northern spotted owls have declined at a faster rate than anticipated, especially in the northern parts of the subspecies' range (Anthony *et al.* 2006, pp. 31–32; Forsman *et al.* 2011, pp. 65, 76). We now know that the suite of threats (detailed below) facing the northern spotted owl differs from those at the time it was listed; in addition to the effects of historical and ongoing habitat loss, the northern spotted owl faces a new significant and complex threat in the form of competition from the congeneric (referring to a member of the same genus) barred owl (USFWS 2011, pp. I–7 to I–8).

During the second half of the 20th century, barred owls expanded their range from eastern to western North America, and the range of the barred owl now completely overlaps that of the northern spotted owl (Gutiérrez *et al.* 1995, p. 3; Crozier *et al.* 2006, p. 761). Barred owls compete with northern spotted owls for habitat and resources for breeding, feeding, and sheltering, and the presence of barred owls has significant negative effects on northern spotted owl reproduction, survivorship, and successful occupation of territories (see Population Status and Trends, below). The loss of habitat has the potential to intensify competition with barred owls by reducing the total amount of resources available to the northern spotted owl and by increasing the likelihood and frequency of competitive interactions. While there are important differences in the ecology between barred owls and northern spotted owls, barred owls select very similar habitat for breeding, feeding, and sheltering, and loss of habitat has the potential to intensify competition between species. While conserving habitat will not completely alleviate the barred owl threat, Dugger *et al.* (2011, pp. 2464–2465) found that northern spotted owl occupancy and colonization rates decreased as both barred owl presence increased and available habitat decreased. Similar to another case in which increased suitable habitat was required to support two potentially competing raptors, these authors concluded that increased habitat protection for northern spotted owls

may be necessary to provide for sustainable populations in the presence of barred owls in some areas (Dugger *et al.* 2011, p. 2467). Maintaining high-quality habitat has been important since the northern spotted owl was initially listed as a threatened species in 1990, and this competitive pressure from barred owls has intensified the need to conserve and restore large areas of contiguous, high-quality habitat across the range of the northern spotted owl (Dugger *et al.* 2011, p. 2464; Forsman *et al.* 2011, p. 76; USFWS 2011, Recovery Action 32 [RA32], p. III–67).

It is becoming increasingly evident that solely securing habitat will not be effective in achieving the recovery of the northern spotted owl when barred owls are present (USFWS 2011, p. vi). While conservation of high-quality habitat is essential for the recovery and conservation of the owl, habitat conservation alone is not sufficient to achieve recovery objectives. As stated in the Revised Recovery Plan, ''* * * addressing the threats associated with past and current habitat loss must be conducted simultaneously with addressing the threats from barred owls. Addressing the threat from habitat loss is relatively straightforward with predictable results. However, addressing a large-scale threat of one raptor on another, closely related raptor has many uncertainties'' (USFWS 2011, p. I–8). A designation of critical habitat is intended to ameliorate habitat-based threats to an endangered or threatened species; critical habitat cannot reasonably be expected to fully address other, non-habitat-related threats to the species. In the case of the northern spotted owl, the recovery goal of supporting population viability and demographically stable populations of northern spotted owls will likely require habitat conservation in concert with the implementation of recovery actions that address other, non-habitat-based threats to the species, including the barred owl. In addition, recovery actions include scientific evaluation of potential management options to reduce the impact of barred owls on northern spotted owls (USFWS 2011, Recovery Action 29 [RA29], p. III–65), and implementation of management actions determined to be effective (USFWS 2011, Recovery Action 30 [RA30], p. III–65).

When developing a critical habitat rule, the Service must use the best scientific information available to identify critical habitat as defined in section (3)(5)(A) of the Act, which are (i) the specific areas within the geographical area occupied by the species at the time it was listed that provide the physical or biological features essential for the conservation of the species, and which may require special management considerations or protection, and (ii) specific areas outside the geographical area occupied by the species at the time it was listed that are otherwise determined to be essential to the conservation of the species. However, like most critical habitat designations, this rule addresses elements of risk management, because we must make recommendations and decisions in the face of incomplete information and uncertainty about factors influencing northern spotted owl populations. This uncertainty exists even though the northern spotted owl is among the most thoroughly studied of listed species. We understand a great deal about the habitats the subspecies prefers and the factors that influence its demographic trends. Nonetheless, considerable uncertainty remains, particularly about interactions among different factors that threaten the owl.

In the face of such uncertainty, the Revised Recovery Plan proposes strategies to address the primary threats to the northern spotted owl from habitat loss and barred owls (USFWS 2011, p. I–7). The effects of climate change and of past management practices are changing forest ecosystem processes and dynamics, including patterns of wildfires, insect outbreaks, and disease, to a degree greater than anticipated in the Northwest Forest Plan (NWFP) (Hessburg *et al.* 2005, pp. 134–135; Carroll *et al.* 2010, p. 899; Spies *et al.* 2010, entire; USFWS 2011, p. I–8). At the same time, the expansion of barred owl populations is altering the capacity of intact habitat to support northern spotted owls. Projecting the effects of these factors and their interactions into the future leads to even higher levels of uncertainty, especially considering how the influences of different threats may vary across the owl's large geographical range. It is clear that ecosystem-level changes are occurring within the northern spotted owl's forest habitat.

The development of a critical habitat network for the northern spotted owl must take into account current uncertainties, such as those associated with barred owl impacts and climate change predictions (USFWS 2011, p. III–10). These uncertainties require that we make some assumptions about likely future conditions in developing, modeling, and evaluating potential critical habitat for the northern spotted owl; those assumptions are identified clearly in this rule (see Criteria Used to Identify Critical Habitat, below) and in our supporting documentation (Dunk *et al.* 2012b, entire).

Given the continued decline of northern spotted owl populations, the apparent increase in severity of the threat from barred owls, and information indicating a recent loss of genetic diversity for the subspecies, retaining both occupied northern spotted owl sites and unoccupied, high-value northern spotted owl habitat across the subspecies' range are key components for recovery (USFWS 2011, p. I–9). High-value habitat is defined in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) as habitat that is important for maintaining northern spotted owls on landscapes, including areas with current and historic use by northern spotted owls. We refer readers to the glossary (Appendix G) of the Revised Recovery Plan for definitions of forest stand conditions and habitat types discussed in this rule.

Accordingly, in this rule, we have identified areas of habitat occupied at the time of listing that provide the physical or biological features essential to the conservation of the northern spotted owl, and that may require special management considerations or protection. When occupied areas were not adequate to achieve essential recovery goals, we also identified some unoccupied areas as critical habitat for the northern spotted owl only upon a determination that such areas are essential to the conservation of the species (see the second part of the definition of critical habitat in section (3)(5)(a)(ii), which states that critical habitat also includes ''specific areas outside the geographical area occupied by the species at the time of listing in accordance with the provisions of section 4 of this Act, upon a determination by the Secretary that such areas are essential for the conservation of the species.'') However, it is important to note that this revised designation of critical habitat does not include all sites where northern spotted owls are presently known to occur. The habitat modeling that we used, in part, to assist us in developing this revised designation was based primarily on present habitat suitability. While we did also consider the present known locations of northern spotted owls in refining the identified habitat network, not all such sites were included in the revised designation if those areas did not make a significant contribution to population viability (for example, if known sites were too small or isolated to play a meaningful role in the conservation of the species; see Criteria Used to Identify Critical Habitat). This is in accordance with section 3(5)(C) of

the Act, which specifies that ''critical habitat shall not include the entire geographical area which can be occupied by the threatened or endangered species.''

Because of the uncertainties associated with the effects of barred owl interactions with the northern spotted owl and habitat changes that may occur as a result of climate change, active adaptive forest management strategies will be needed to achieve results in certain landscapes. Active adaptive forest management is a systematic approach for improving resource management by learning from the results of explicit management policies and practices and applying that learning to future management decisions (USFWS 2011, p. G–1). This critical habitat rule identifies key sources of uncertainty, and the need to learn from our management of forests that provide habitat for northern spotted owls. We have designated a critical habitat network that was developed based on what we determined to be the areas containing the physical and biological features essential for the conservation of the northern spotted owl or are otherwise essential to owl conservation, after taking into consideration information on essential habitats, the current distribution of those habitats, and the best available scientific knowledge about northern spotted owl population dynamics, while acknowledging uncertainty about future conditions in Pacific Northwest forests.

An Ecosystem-Based Approach to the Conservation of the Northern Spotted Owl and Managing Its Critical Habitat

Section 2 of the Act states, ''The purposes of this Act are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved.'' Although the conservation of the listed species is the specific objective of a critical habitat designation, the essential physical or biological features that serve as the basis of critical habitat are often essential components of the ecosystem upon which the species depends. In such cases, a fundamental goal of critical habitat management is not only to conserve the listed species, but also to conserve the ecosystem upon which that species depends. This is the case with the northern spotted owl.

An ecosystem is defined as a biological community of interacting organisms and their physical environment, or as the complex of a community of organisms and its environment functioning as an ecological unit (Krebs 1972, pp. 10–11; Ricklefs 1979, pp. 31–32, 869). These ecosystem interactions and functions are often referred to as ecological relationships or processes. Thus, to conserve the northern spotted owl as directed by the Act, one must also conserve the ecological processes that occur within the ecological landscape inhabited by the species. These processes—such as vegetation succession, forest fire regimes, and nutrient cycling—create and shape the physical or biological features that form the foundation of critical habitat. The northern spotted owl was initially listed as a threatened species largely due to the loss or degradation of the late-successional forest ecosystems upon which it depends. A complex interaction of physical or biological factors contribute to the development and maintenance of these ecosystems, which in turn provide the northern spotted owl with the environmental conditions required for its conservation and survival, such as large areas of suitable habitat, nest structures, and sufficient prey to sustain interconnected populations of owls across the landscape. A fundamental goal of critical habitat management should thus be to understand, describe, and conserve these processes, which in turn will maintain the physical or biological features essential to the conservation of the species. This ''ecosystem approach'' will ultimately have the highest likelihood of conserving listed species such as the northern spotted owl in the long term (Knight 1998, p. 43).

The U.S. Forest Service, which manages the great majority of areas being designated as revised northern spotted owl critical habitat, has prioritized restoring and maintaining natural ecological function and resiliency to its forest lands (Blate *et al.* 2009, entire; USDA 2010, entire; Tidwell 2011, entire). Active adaptive forest management within critical habitat, as discussed herein for the consideration of land managers, may be fully compatible and consistent with these landscape-level ecosystems. Most importantly, this approach is compatible with the ecosystem-based approach of the Northwest Forest Plan.

Revised critical habitat for the northern spotted owl includes a diverse forest landscape that covers millions of acres and contains several different forest ecosystems and thousands of plant and animal species. It ranges from moist old-growth conifer forest in the western portion, to a mix of conifers and hardwood trees in the Klamath region, to dry, fire-prone forests in the eastern Cascades. Thousands of species occur in these forest ecosystems, including other listed and sensitive species with very specific biological needs. In areas where prescribed management is needed to maintain ecosystem function, such management is often expensive, logistically difficult, and contentious (Thompson *et al.* 2009, p. 29). Many scientists believe a single-species approach to forest management is limited and that land managers need to focus on broader landscape goals that address ecosystem process and future habitat conditions (see, e.g., Thomas *et al.* 2006, p. 286; Boyd *et al.* 2008, p. 42; Hobbs *et al.* 2010, p. 487; Mori 2011, pp. 289–290). The Revised Recovery Plan (USFWS 2011) encourages the application of ecosystem management principles to ensure the long-term conservation of the northern spotted owl and its habitat, as well as other species dependent on these shared ecosystems.

We reference here the recommendations for habitat management as made in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011). This discussion is provided primarily for consideration by Federal, State, local, and private land managers, as they make decisions on the management of forest land under their jurisdictions and through their normal processes. This critical habitat rule does not take any action or adopt any policy, plan or program in relation to active forest management.

Critical Habitat and the Northwest Forest Plan

It is important to understand the relationship between northern spotted owl critical habitat and the Northwest Forest Plan (NWFP). In brief, the designation of areas as critical habitat does not change land use allocations or Standards and Guidelines for management under the NWFP. Critical habitat for the northern spotted owl was first designated in 1992 (January 15, 1992; 57 FR 1796). Since 1994, the NWFP has also served as an important landscape-level plan that has contributed to the conservation of the northern spotted owl and late-successional forest habitat on Federal lands across the range of the species (Thomas *et al.* 2006, pp. 278–284). The NWFP introduced a system of reserves where conservation of late-successional forest, riparian habitats, northern spotted owls, and other species dependent on older forest would be the priority, and matrix areas where timber harvest would be the goal. The Standards and Guidelines for the NWFP (USDA and USDI 1994) prescribe an ecosystem-based approach to management for the Federal action

agencies that manage these lands, and provide guidance for activities conducted on different land use allocations. All Bureau of Land Management and U.S. Forest Service lands identified as northern spotted owl critical habitat in this rule fall under the NWFP, and should be managed consistent with its standards. Here we briefly provide a summary of how our designation of critical habitat has been informed by and relates to forest management under the NWFP.

In developing this critical habitat designation, the Service recognizes the importance of the NWFP as the overarching land management strategy for conservation of the northern spotted owl and other native species associated with old-growth and late-successional forest. The system of reserves within the NWFP is essential for the conservation and development of large areas of late-successional forest across the landscape; however, because the NWFP was designed to benefit multiple species not every acre of the late-successional reserves (LSRs) provide high-quality habitat for northern spotted owls. In addition, barred owls have become increasingly abundant in the Pacific Northwest and likely have a large effect on the continued decline of northern spotted owl populations. With barred owls now sharing the range of the northern spotted owl, conservation of northern spotted owls outside NWFP reserved areas is increasingly important for species recovery.

In our designation of critical habitat on Federal lands, we identified lands that contain the features essential to the conservation of the species including lands both within NWFP reserves and matrix that function as highly valuable northern spotted owl habitat. As noted above, designation as critical habitat does not change these land use allocations or Standards and Guidelines for management under the NWFP, and we fully recognize the ecological functions and land management goals of the different land use allocations as outlined under the NWFP. While the NWFP has been successful in conserving large blocks of late-successional forest (Thomas *et al.* 2006, p. 283, Davis *et al.* 2011, p. 38), concerns have been expressed that it provides less than the anticipated level of commercial timber harvest on matrix lands, does not promote active restoration in areas that may contain uncharacteristically high risk of severe fire (Spies *et al.* 2006, pg. 359; Thomas *et al.* 2006, p. 277), and does not promote development of complex early-seral forest in areas where regeneration harvest has been conducted (Betts *et al.* 2010, p. 2117; Hagar 2007, p. 109; Swanson *et al.* 2011, p. 124) (''seral'' refers to developmental or successional stages of the forest community that influences species composition, i.e., early, mid, late seral stages).

Thomas *et al.* (2006, pp. 284–287) provided three recommendations to improve the NWFP. These recommendations are highly relevant to northern spotted owl critical habitat conservation and management:

1. Conserve old-growth trees and forests on Federal lands *wherever they are found* (emphasis added), and undertake appropriate restoration treatment in the threatened forest types.

2. Manage NWFP forests as dynamic ecosystems that conserve all stages of forest development (e.g., encompassing the range of conditions between early-seral and old-growth), and where tradeoffs between short-term and long-term risks are better balanced.

3. Recognize the NWFP as an integrated conservation strategy that contributes to all components of sustainability across Federal lands.

It is our hope that management of critical habitat for the northern spotted owl will be compatible with these broader landscape management goals articulated by Thomas *et al.* (2006, pp. 284–287). Furthermore, the Standards and Guidelines for the NWFP encourage an ecosystem-based approach to land management (*e.g.,* USDA and USDI 1994, p. A–1, Standards and Guidelines, pp. C–12, C–13). As discussed in the Revised Recovery Plan, recovery of the northern spotted owl will likely require that an ecosystem management approach that includes both passive and active management, to meet a variety of conservation goals that support long-term northern spotted owl conservation, be implemented. We fully support the land use allocation goals and the Standards and Guidelines for management under the NWFP (USDA and USDI 1994) as informed by the recommendations of the Revised Recovery Plan. Some general considerations for managing the threats to the essential physical or biological features for the northern spotted owl are discussed in the *Special Management Considerations or Protections* and *Determinations of Adverse Effects and Application of the ''Adverse Modification'' Standard* sections of this document, below, as well as in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011, pp. III–11 to III–39).

Forest Management Activities in Northern Spotted Owl Critical Habitat

As stated above, many areas of critical habitat do not require active management, and active forest management within such areas could negatively impact northern spotted owls. We are not encouraging land managers to consider active management in areas of high-quality owl habitat or occupied owl sites; rather, we encourage management actions that will maintain and restore ecological function where appropriate. In some areas, forest stands are not on a trajectory to develop into high-value habitat, ecological processes have been disrupted by human actions, or projected climate change is expected to further disrupt or degrade desired forest conditions. In these areas, land managers may choose to implement active management, as recommended in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011), to improve ecological health and development of forest conditions more favorable to northern spotted owls and other biodiversity. For example, LSRs are to be managed to protect and enhance old-growth forest conditions (defined in the Revised Recovery Plan as forests that have accumulated specific characteristics related to tree size, canopy structure, snags, and woody debris and plant associations). According to the NWFP Standards and Guidelines (USDA and USDI 1994), no programmed timber harvest is allowed inside the reserves. However, thinning or other silvicultural treatments inside these reserves may occur in younger stands if the treatments are beneficial to the creation and maintenance of late-successional forest conditions. On the east of the Cascades and in Oregon and California Klamath Provinces, additional management activities may be considered both within and outside reserves to reduce risks of large-scale disturbance (NWFP Standards and Guidelines, p. C–12—C–13).

We also recognize that ecological restoration is not the management goal on all NWFP land use allocations (*e.g.,* matrix) within designated critical habitat, and we provide a discussion of options land managers could consider to tailor traditional forest management activities on these lands to consistent with conservation of current and future northern spotted owl habitat (see, *e.g.,* Gustafsson *et al.* 2012, entire; Franklin *et al.* 2007, entire; Kuuluvainen and Grenfell 2012, entire; North and Keeton 2008; Long 2009, entire; Lindenmayer *et al.* 2012; entire). Our discussion of potential management considerations

for the northern spotted owl are intended to be fully compatible with the objectives and Standards and Guidelines of the NWFP as informed by the conservation guidelines presented in the 2011 Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) to provide a means whereby the ecosystems on which northern spotted owls depend will be conserved.

Mimicking natural disturbance regimes, such as fire, is an important strategy in North American forest management (Seymour and Hunter 1999, p. 56; Long 2009, p. 1868; Gustafsson *et al.* 2012, p. 635; Kuuluvainen and Grenfell 2012, entire). This change is occurring in response to: (1) The simplification of forests in terms of structure, age-class diversity, and species composition as a result of management for timber production, and (2) a recognition of fundamental changes in ecosystem function and processes due to land management practices, especially fire and successional patterns (Franklin *et al.* 2002, pp. 402–408; Hessburg *et al.* 2005, pp. 134–135; Drever *et al.* 2006, p. 2291). Although human disturbance is unlikely to precisely mimic natural forest disturbance, it can be used to better maintain the resilience of landscapes and wildlife populations to respond to natural disturbance and climate change (Lindenmayer *et al.* 2008, p. 87). In general, prescriptions (e.g., vegetation management, prescribed fire, etc.) that apply ecological forestry principles to address the restoration and conservation of broader ecological processes in areas where this is needed, while minimizing impacts to structurally diverse or mature and old forest that does not require such management can be compatible with maintaining the critical habitat's essential features in the long term at the landscape scale (USFWS 2011, p. III–14). The Service has recently consulted on these types of management actions in occupied northern spotted owl habitat on Bureau of Land Management (BLM) and U.S. Forest Service (USFS) lands.

Specifically prescribing such management is beyond the scope or purpose of this document, and should instead be developed by the appropriate land management agency at the appropriate land management scale (e.g., National Forest or Bureau of Land Management District) (USDA 2010, entire; Fontaine and Kennedy 2012, p. 1559; Gustafsson *et al.* 2012, pp. 639–641, Davis *et al.* 2012, entire) through the land managing agencies' planning processes and with technical assistance from the Service, as appropriate. Furthermore, we encourage an active adaptive forest management approach, should agencies choose to implement ecological forestry practices, as we continue to learn from continuing research on these methods (see *Research and Adaptive Management,* below).

Some general considerations for managing for the conservation of essential physical or biological features within northern spotted owl critical habitat are discussed in more detail in the *Special Management Considerations or Protections* and *Determinations of Adverse Effects and Application of the ''Adverse Modification'' Standard* sections of this document, below. In sum, vegetation and fuels management in dry and mixed-dry forests may be appropriate both within and outside designated critical habitat where the goal of such treatment is to conserve natural ecological processes or restore them (including fire) where they have been modified or suppressed (Allen *et al.* 2002, pp. 1429–1430; Spies *et al.* 2006, pp. 358–361; Fielder *et al.* 2007, entire; Prather *et al.* 2008, entire; Lindenmayer *et al.* 2009, p. 274; Tidwell 2011, entire; Stephens *et al.* 2009, pp. 316–318; Stephens *et al.* 2012a, p. 13; Stephens *et al.* 2012b, pp. 557–558; Franklin *et al.* 2008, p. 46; Miller *et al.* 2009, pp. 28–30; Fule *et al.* 2012, pp. 75–76). These types of management are encouraged in the NWFP (USDA and USDI 1994, p. C–13). Likewise, in some moist and mixed forests, management of northern spotted owl critical habitat should be compatible with broader ecological goals, such as the retention of high-quality older forest, the continued treatment of young or homogenous forest plantations to enhance structural diversity, heterogeneity and late-successional forest conditions, and the conservation or restoration of complex early-seral forest habitat, where appropriate (Spies *et al.* 2007b, pp. 57–63; Betts *et al.* 2010, pp. 2117, 2126–2127; Swanson *et al.* 2011, entire).

In general, actions that promote ecological restoration and those that apply ecological forestry principles at appropriate scales as described above and in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011, pp. III–11 to III–41) may be, in the right circumstances, consistent with the conservation of the northern spotted owl and the management of its critical habitat. However, we emphasize that this rule does not take any action or adopt any policy, plan or program in relation to active forest management. The discussion is provided only for consideration by Federal, State, local and private land managers, as well as the public, as they make decisions on the management of forest land under their jurisdictions and through their normal processes.

Research and Adaptive Management

The Service supports the goals of maintaining and restoring ecological function and development of future northern spotted owl habitat. We encourage land managers to consider a stronger focus on ecological forestry in areas where commercial harvest and restoration are planned. We recognize the need to balance both the conservation of current owl sites and the development of future owl habitat. However, a better understanding of how ecological forestry approaches affect owls and their prey is needed. Studies have shown negative effects of commercial thinning and other conventional forestry practices on both northern spotted owls (Forsman *et al.* 1984, pp. 16–17; Meiman *et al.* 2003, p. 1261) and their prey (Waters *et al.* 1994, p. 1516; Luoma *et al.* 2003, pp. 343–373; Wilson 2010, entire).This need was recognized in Recovery Action 11 of the Revised Recovery Plan, which states ''When vegetation management treatments are proposed to restore or enhance habitat for northern spotted owls (e.g., thinnings, restoration projects, prescribed fire, etc.), consider designing and conducting experiments to better understand how these different actions influence the development of northern spotted owl habitat, northern spotted owl prey abundance and distribution, and northern spotted owl demographic performance at local and regional scales.'' Furthermore, the recovery strategy outlined in the Revised Recovery Plan (USFWS 2011) identifies monitoring and research, as well as active adaptive forest management, as important steps in achieving recovery goals.

Given these concerns, and recognizing that appropriate management actions will vary depending upon site-specific conditions, we provide the following suggestions regarding active forest management for consideration by land managers within critical habitat as consistent with the recommendations of the Revised Recovery Plan for the Northern Spotted Owl:

1. Focus active management in younger forest, lower quality owl habitat, or where ecological conditions are most departed from the natural or desired range of variability.

2. In moist forests on Federal lands, follow NWFP guidelines as informed by the Revised Recovery Plan and focus on areas outside of LSRs (i.e., matrix). In dry forests, follow NWFP guidelines and focus on lands in or outside of reserves

that are most ''at-risk'' of experiencing uncharacteristic disturbance and where the landscape management goal is to restore more natural or resilient forest ecosystems (see, *e.g.,* Davis *et al.* 2012, entire; Franklin *et al.* 2008, p. 46).

3. Avoid or minimize activities in active northern spotted owl territories (or the high-quality habitat within these territories).

4. Ensure transparency of process so the public can see what is being done, where it is done, what the goal of the action is, and how well the action leads to the desired goal.

5. Practice active adaptive forest management by incorporating new information and learning into future actions to make them more effective, focusing on how these actions affect northern spotted owls and their prey.

Towards this objective of learning critical new scientific insights from research and adaptive management, we especially encourage research and active adaptive forest management on the seven Forest Service Experimental Forests (H.J. Andrews Experimental Forest, Pringle Falls Experimental Forest, South Umpqua Experimental Forest, and Cascades Head Experimental Forest in Oregon; Wind River Experimental Forest and Entiat Experimental Forest in Washington; and Yurok Redwood Experimental Forest in California) within designated northern spotted owl critical habitat. We acknowledge the specific value and contributions of research done within experimental forests in furtherance of the research and active adaptive forest management objectives in the Revised Recovery Plan. These Experimental Forests have four principal scientific advantages that support the specific kinds of research needed to better understand how management affects and potentially enhances northern spotted owl habitat:

(1) These sites are intended for and enabled to conduct manipulative research to test forest management strategies in a rigorous scientific manner;

(2) They have long-term baseline datasets that enable detailed climate/environmental change assessments;

(3) The sites represent a diversity of forest types within the range of northern spotted owl; and

(4) Experimental forests have been the subject of intensive, long-term study that can serve as a backdrop for new research.

Essential research and active adaptive forest management questions, detailed in the Revised Recovery Plan, that could be conducted on Experimental Forests include (but are not limited to):

(a) What vegetation management treatments best accelerate the development of forest structure associated with northern spotted owl habitat functions while maintaining or restoring natural disturbance and provide greater ecosystem resiliency?

(b) What are the effects of wildland and prescribed fire on the structural elements of northern spotted owl habitat?

(c) Can strategically-placed restoration treatments be used to reduce the risk of northern spotted owl habitat being burned by high severity fire within dry forest ecosystems?

(d) What are the effects of epidemic forest insect outbreaks on northern spotted owl occupancy and habitat use immediately following the event and at specified time periods after treatment?

Sound scientific information represents a vital component of our path to recovery for the northern spotted owl (and almost all threatened or endangered species). We believe it would be counterproductive to inhibit or curtail research that is designed to benefit the northern spotted owl and the ecosystem in which it is found, and therefore support research activities within experimental forests.

The Biology and Ecology of the Northern Spotted Owl

Physical Description and Taxonomy

The northern spotted owl is a medium-sized owl and the largest of the three subspecies of northern spotted owls currently recognized by the American Ornithologists' Union (Gutiérrez *et al.* 1995, p. 2). It is dark brown with a barred tail and white spots on the head and breast, and has dark brown eyes that are surrounded by prominent facial disks. The taxonomic separation of these three subspecies is supported by numerous factors (reviewed in Courtney *et al.* 2004, pp. 3–3 to 3–31), including genetic (Barrowclough and Gutiérrez 1990, p. 739; Barrowclough *et al.* 1999, p. 922; Haig *et al.* 2004, p. 1353; Barrowclough *et al.* 2005, p. 1113), morphological (Gutiérrez *et al.* 1995, pp. 2 to 3), behavioral (Van Gelder 2003, p. 30), and biogeographical characteristics (Barrowclough *et al.* 1999, p. 928).

Distribution and Habitat

The current range of the northern spotted owl extends from southwest British Columbia through the Cascade Mountains, coastal ranges, and intervening forested lands in Washington, Oregon, and California, as far south as Marin County, California. The subspecies is listed as a threatened species under the Act throughout its range (55 FR 26114; June 26, 1990). Within the United States, the northern spotted owl ranges across 12 ecological regions, based on recognized landscape subdivisions exhibiting different physical and environmental features, often referred to as ''physiographic provinces'' (Franklin and Dyrness 1988, pp. 5–26; Thomas *et al.* 1990, p. 61; USDA and USDI 1994, p. A–3). These include the Olympic Peninsula, Western Washington Lowlands, Western Washington Cascades, Eastern Washington Cascades, Oregon Coast Ranges, Western Oregon Cascades, Willamette Valley, Eastern Oregon Cascades, Oregon Klamath, California Klamath, California Coast Ranges, and California Cascades Provinces (based on USDA and USDI 1994, p. A–3). Very few northern spotted owls are found in British Columbia, in the Western Washington Lowlands or Willamette Valley; therefore, the subspecies is restricted primarily to 10 of the 12 provinces within its range.

For the purposes of developing this rule, and based on Appendix C of the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011, pp. C–7 to C–13), we have divided the range of the northern spotted owl into 11 different regions. We used these 11 regions in the habitat modeling that informed this revised designation of critical habitat. The regions used here are more ''owl specific'' than the physiographic provinces used in the past. In addition to regional patterns of climate, topography, and forest communities, which the physiographic provinces also considered, the 11 regions are based on specific patterns of northern spotted owl habitat relationships and prey base relationships across the range of the species. The 11 regions include the North Coast Olympics; West Cascades North; West Cascades Central; West Cascades South; East Cascades North; East Cascades South; Oregon Coast; Klamath West; Klamath East; Redwood Coast; and Inner California Coast Ranges. We additionally grouped these 11 regions into 4 broad ecological zones (West Cascades/Coast Ranges of Oregon and Washington; East Cascades; Redwood; and Klamath and Northern California Interior Coast Ranges). A map of the 11 regions used for the purposes of habitat modeling, as well as the 4 ecological zones, is provided in Figure 1 of this document. We used these 11 regions as the organizing units for our designation of critical habitat, and the 4 ecological zones for the identification of region-specific primary constituent

elements (PCEs) for the northern spotted owl.

Northern spotted owls generally rely on older forested habitats because such forests contain the structures and characteristics required for nesting, roosting, and foraging, and dispersal. Forest characteristics associated with northern spotted owls usually develop with increasing forest age, but their occurrence may vary by location, past forest practices, and stand type, history, and condition. Although northern spotted owl habitat is variable over its range, some general attributes are common to the owl's life-history requirements throughout its range. To support northern spotted owl reproduction, a home range requires appropriate amounts of nesting, roosting, and foraging habitat arrayed so that nesting pairs can survive, obtain resources, and breed successfully. In northern parts of the range where nesting, roosting, and foraging habitat have similar attributes, nesting is generally associated with late-seral or old-growth forest in the core area (Swindle *et al.* 1999, p. 1216). In some southern portions of the range, northern spotted owl survival is positively associated with the area of old forest habitat in the core, but reproductive output is positively associated with amount of edge between older forest and other habitat types in the home range (Franklin *et al.* 2000, pp. 573, 579). This pattern suggests that where dusky-footed woodrats (*Neotoma fuscipes*) are the primary prey species, core areas that have nesting habitat stands interspersed with varied types of foraging habitat may be optimal for northern spotted owl survival and reproduction. Both the amount and spatial distribution of nesting, roosting, foraging, and dispersal habitat influence reproductive success and long-term population viability of northern spotted owls.

Population growth can occur only if there is adequate habitat in an appropriate configuration to allow for the dispersal of owls across the landscape. This includes support of dispersing juveniles, as well as nonresident subadults and adults that have not yet recruited into the breeding population. The survivorship of northern spotted owls is likely greatest when dispersal habitat most closely resembles nesting, roosting, and foraging habitat, but owls may use other types of habitat for dispersal on a short-term basis. Dispersal habitat, at a minimum, consists of stands with adequate tree size and canopy cover to provide protection from avian predators and at least minimal foraging opportunities (57 FR 1805, January 15, 1992). In this rule, we consider canopy cover as a vertical measurement of the amount of canopy that would cover the ground.

The three essential functions served by habitat within the home range of a northern spotted owl are:

(1) *Nesting.* Nesting habitat is essential to provide structural features for nesting, protection from adverse weather conditions, and cover to reduce predation risks. Habitat requirements for nesting and roosting are nearly identical. However, nesting habitat is specifically associated with a high incidence of large trees with various deformities (large cavities, broken tops, mistletoe (*Arceuthobium* spp.) infections, and other evidence of decadence) or large snags suitable for nest placement. Additional features that support nesting and roosting typically include a moderate to high canopy cover; a multilayered, multispecies canopy with large overstory trees; large accumulations of fallen trees and other woody debris on the ground; and sufficient open space below the canopy for northern spotted owls to fly (Thomas *et al.* 1990, p. 164). Forested stands with high canopy cover also provide thermal cover (Weathers *et al.* 2001, p. 686) and protection from predators. Patches of nesting habitat, in combination with roosting habitat, must be sufficiently large and contiguous to maintain northern spotted owl core areas and home ranges, and must be proximate to foraging habitat. Ideally, nesting habitat also functions as roosting, foraging, and dispersal habitat.

(2) *Roosting.* Roosting habitat is essential to provide for thermoregulation, shelter, and cover to reduce predation risk while resting or foraging. As noted above, the same habitat generally serves for both nesting and roosting functions; technically ''roosting habitat'' differs from nesting habitat only in that it need not contain those specific structural features used for nesting (cavities, broken tops, and mistletoe platforms), but does contain moderate to high canopy cover; a multilayered, multispecies canopy; large accumulations of fallen trees and other woody debris on the ground; and open space below the canopy for northern spotted owls to fly. In practice, however, roosting habitat is not segregated from nesting habitat. Nesting and roosting habitat will also function as foraging and dispersal habitat.

(3) *Foraging.* Foraging habitat is essential to provide a food supply for survival and reproduction. Foraging habitat is the most variable of all habitats used by territorial northern spotted owls, and is closely tied to the prey base, as described below. Nesting and roosting habitat always provides for foraging, but in some cases owls also use more open and fragmented forests, especially in the southern portion of the range where some younger stands may have high prey abundance and structural attributes similar to those of older forests, such as moderate tree density, subcanopy perches at multiple levels, multilayered vegetation, or residual older trees. Foraging habitat generally has attributes similar to those of nesting and roosting habitat, but foraging habitat may not always support successfully nesting pairs (USDI 1992, pp. 22–25). Foraging habitat can also function as dispersal habitat. The primary function of foraging habitat is to provide a food supply for survival and reproduction.

Because northern spotted owls show a clear geographical pattern in diet, and different prey species prefer different habitat types, prey distribution contributes to differences in northern spotted owl foraging habitat selection across the range. In the northern portion of their range, northern spotted owls forage heavily in older forests or forests with similar complex structure that support northern flying squirrels (*Glaucomys sabrinus*) (Carey *et al.* 1992, p. 233; Rosenberg and Anthony 1992, p. 165). In the southern portion of their range, where woodrats are a major component of their diet, northern spotted owls are more likely to use a variety of stands, including younger stands, brushy openings in older stands, and edges between forest types in response to higher prey density in some of these areas (Solis 1983, pp. 89–90; Sakai and Noon 1993, pp. 376–378; Sakai and Noon 1997, p. 347; Carey *et al.* 1999, p. 73; Franklin *et al.* 2000, p. 579). Both the amount and distribution of foraging habitat within the home range influence the survival and reproduction of northern spotted owls.

Dispersal Habitat and Habitat for Nonresident Owls

Successful dispersal of northern spotted owls is essential to maintaining genetic and demographic connections among populations across the range of the species. Habitats that support movements between larger habitat patches that provide nesting, roosting, and foraging habitats for northern spotted owls act to limit the adverse genetic effects of inbreeding and genetic drift and provide demographic support to declining populations (Thomas *et al.* 1990, pp. 271–272). Dispersing juvenile northern spotted owls experience high mortality rates (more than 70 percent in some studies (Miller 1989, pp. 32–41;

Franklin *et al.* 1999, pp. 25, 28; 55 FR 26115; June 26, 1990)) from starvation, predation, and accidents (Miller 1989, pp. 41–44; Forsman *et al.* 2002, pp. 18–19). Juvenile dispersal is thus a highly vulnerable life stage for northern spotted owls, and enhancing the survivorship of juveniles during this period could play an important role in maintaining stable populations of northern spotted owls.

Successful juvenile dispersal may depend on locating unoccupied suitable habitat in close proximity to other occupied sites (LaHaye *et al.* 2001, pp. 697–698). Dispersing juveniles are likely attracted to conspecific calls, and may look for suitable sites preferentially in the vicinity of occupied territories. When all suitable territories are occupied, dispersers may temporarily pursue a nonresident (nonbreeding) strategy; such individuals are sometimes referred to as ''floaters'' (Forsman *et al.* 2002, pp. 15, 26). Floaters prospect for territorial vacancies created when residents die or leave their territories. Floaters contribute to stable or increasing populations of northern spotted owls by quickly filling territorial vacancies. Where large blocks of habitat with multiple breeding pairs occur, the opportunities for successful recruitment of dispersers and floaters are enhanced due to the within-block production of potential replacement birds (Thomas *et al.* 1990, pp. 295, 307).

Juvenile dispersal occurs in steps (Forsman *et al.* 2002, pp. 13–14), between which dispersing juveniles settle into temporary home ranges for up to several months (Forsman *et al.* 2002, p. 13). Natal dispersal distances, measured from natal areas to eventual home range, tend to be larger for females (about 15 mi (24 km)) than males (about 8.5 mi (13.7 km)) (Courtney *et al.* 2004, p. 8–5). Forsman *et al.* (2002, pp. 15–16) reported dispersal distances of 1,475 northern spotted owls in Oregon and Washington for the period from 1985 to 1996. Median maximum dispersal distance (the straight-line distance between the natal site and the farthest location) for radio-marked juvenile male northern spotted owls was 12.7 mi (20.3 km), and that of female northern spotted owls was 17.2 mi (27.5 km) (Forsman *et al.* 2002, Table 2).

Northern spotted owls can utilize forests with the characteristics needed for nesting, roosting, foraging, and dispersal, and likely experience greater survivorship under such conditions. However, dispersing or nonresident individuals may also make use of other forested areas that do not meet the requirements of nesting or roosting habitat on a short-term basis. Such short-term dispersal habitats must, at minimum, consist of stands with adequate tree size and canopy cover to provide protection from avian predators and at least minimal foraging opportunities.

Population Status and Trends

Demographic data from studies initiated as early as 1985 have been analyzed every 5 years to estimate northern spotted owl demographic rates and population trends (Anderson and Burnham 1992, entire; Burnham *et al.* 1994, entire; Franklin *et al.* 1999, entire; Anthony *et al.* 2006, entire; Forsman *et al.* 2011, entire). The most current evaluation of population status and trends is based on data through 2008 (Forsman *et al.* 2011, p. 1). Based on this analysis, populations on 7 of 11 study areas (Cle Elum, Rainier, Olympic Peninsula, Oregon Coast Ranges, H.J. Andrews, Northwest California, and Green Diamond) were declining (Forsman *et al.* 2011, p. 64, Table 22).

Estimates of realized population change (cumulative population change across all study years) indicated that, in the more rapidly declining populations (Cle Elum, Rainier, and Olympic Peninsula), the 2006 populations were 40 to 60 percent of the population sizes observed in 1994 or 1995 (Forsman *et al.* 2011, pp. 47–49). Populations at the remaining areas (Tyee, Klamath, Southern Oregon Cascades, and Hoopa) showed declining population growth rates as well, although the estimated rates were not significantly different from stable populations (Forsman *et al.* 2011, p 64). A meta-analysis combining data from all 11 study areas indicates that rangewide the population declined at a rate of about 2.9 percent per year for the period from 1985 to 2006. Northern spotted owl populations on Federal lands had better demographic rates than elsewhere, but still declined at a mean annual rate of about 2.8 percent per year for 1985–2006 (Forsman *et al.* 2011, p. 67).

In addition to declines in population growth rates, declines in annual survival were reported for 10 of the 11 study areas (Forsman *et al.* 2011, p. 64, Table 22). Number of young produced each year showed declines at 5 areas (Cle Elum, Klamath, Southern Oregon Cascades, Northwest California, and Green Diamond), was relatively stable at 3 areas (Olympic Peninsula, Tyee, Hoopa), and was increasing at 2 areas (Oregon Coast Ranges, H. J. Andrews) (Forsman *et al.* 2011, p. 64 Table 22).

As noted above, the barred owl has emerged as a greater threat to the northern spotted owl than was previously recognized. The range of the barred owl has expanded in recent years and now completely overlaps that of the northern spotted owl (Crozier *et al.* 2006, p. 761). The presence of barred owls has significant negative effects on northern spotted owl reproduction (Olson *et al.* 2004, p. 1048), survival (Anthony *et al.* 2006, p. 32), and number of territories occupied (Kelly *et al.* 2003, p. 51; Olson *et al.* 2005, p. 928). The determination of population trends for the northern spotted owl has become complicated by the finding that northern spotted owls are less likely to call when barred owls are also present; therefore, they are more likely to be undetected by standard survey methods (Olson *et al.* 2005, pp. 919–929; Crozier *et al.* 2006, pp. 766–767). As a result, it is difficult to determine whether northern spotted owls no longer occupy a site, or whether they may still be present but are not detected. The 2011 Revised Recovery Plan for the Northern Spotted Owl concludes that ''barred owls are contributing to the population decline of northern spotted owls, especially in Washington, portions of Oregon, and the northern coast of California.'' (USFWS 2011, p. B–12).

British Columbia has a small population of northern spotted owls. This population has declined at least 49 percent since 1992 (Courtney *et al.* 2004, p. 8–14), and by as much as 90 percent since European settlement (Chutter *et al.* 2004, p. 6) to a 2004 breeding population estimated at about 23 birds (Sierra Legal Defence [sic] Fund and Western Canada Wilderness Committee 2005, p. 16) on 15 sites (Chutter *et al.* 2004, p. 26). Chutter *et al.* (2004, p. 30) suggested immediate action was required to improve the likelihood of recovering the northern spotted owl population in British Columbia. In 2007, the Northern Spotted Owl Population Enhancement Team recommended to remove northern spotted owls from the wild in British Columbia. Personnel in British Columbia captured and brought into captivity the remaining 16 known wild northern spotted owls. Prior to initiating the captive-breeding program, the population of northern spotted owls in Canada was declining by as much as 35 percent per year (Chutter *et al.* 2004, p. 6). The amount of previous interaction between northern spotted owls in Canada and the United States is unknown (Chutter *et al.* 2004, p. 24). Although the status of the northern spotted owl in Canada is informative in terms of the overall declining trend of the northern spotted owl throughout its range, and consequently the increased need for conservation in those areas

where it persists, the Service does not designate critical habitat in foreign countries (50 CFR 424.12(h)).

Life History

Northern spotted owls are a long-lived species with relatively stable and high rates of adult survival, lower rates of juvenile survival, and highly variable reproduction. Franklin *et al.* (2000, p. 576) suggested that northern spotted owls follow a ''bet-hedging'' life-history strategy, where natural selection favors individuals that reproduce only during favorable conditions. For such species, population growth rate is more susceptible to changes in adult survival than to recruitment of new individuals into the population. For northern spotted owls, recent demographic analyses have indicated declining trends in both adult survival and recruitment across much of the species range (Forsman *et al.* 2011, p. 64, Table 22).

Northern spotted owls are highly territorial (Courtney *et al.* 2004, p. 2–7). They maintain large home ranges; however, they actively defend a smaller area, and overlap between the outer portions of the home ranges of adjacent pairs is common (Forsman *et al.* 1984, pp. 5, 17, 22–24; Solis and Gutiérrez 1990, p. 742; Forsman *et al.* 2005, p. 374). Pairs are nonmigratory and remain on their home range throughout the year, although they often increase the area used for foraging during fall and winter (Forsman *et al.* 1984, p. 21; Sisco 1990, p. 9), likely in response to potential depletion of prey in the core of their home range (Carey *et al.* 1992, p. 245; Carey 1995, p. 649; but see Rosenberg *et al.* 1994, entire). The northern spotted owl shows strong year-round fidelity to its territory, even when not nesting (Solis 1983, pp. 23–28; Forsman *et al.* 1984, pp. 52–53) or after natural disturbance alters habitat characteristics within the home range (Bond *et al.* 2002, pp. 1024–1026). A discussion of northern spotted owl home range size and use is included in the Primary Constituent Elements section of this rule.

Prey

Northern spotted owl diets vary across owl territories, years, seasons, and geographical regions (Forsman *et al.* 2001, pp. 146–148; 2004, pp. 217–220). However, four to six species of nocturnal mammals typically dominate their diets (Forsman *et al.* 2004, p. 218), with northern flying squirrels being a primary prey species in all areas. In Washington, diets are dominated by northern flying squirrels, snowshoe hare (*Lepus americanus*), bushy-tailed woodrats (*Neotoma cinerea*), and boreal red-backed voles (*Clethrionomys gapperi*) (Forsman *et al.* 2001, p. 144). In Oregon and northern California, northern flying squirrels in combination with dusky-footed woodrats, bushy-tailed woodrats, red tree voles (*Arborimus longicaudus*), and deer mice (*Peromyscus maniculatus*) comprise the majority of diets (Courtney *et al.* 2004, pp. 41–31 to 4–32; Forsman *et al.* 2004, p. 221). Northern spotted owls are also known to prey on insects, other terrestrial mammals, birds, and juveniles of larger mammals (e.g., mountain beaver (*Aplodontia rufa*) (Forsman *et al.* 2001, p. 146; 2004, p. 223).

Northern flying squirrels are positively associated with late-successional forests with high densities of large trees and snags (Holloway and Smith 2011, p. 671). Northern flying squirrels typically use cavities in large snags as den and natal sites, but may also use cavities in live trees, hollow branches of fallen trees, crevices in large stumps, stick nests of other species, and lichen and twig nests they construct (Carey 1995, p. 658), as well as mistletoe brooms when snags are not abundant (Lehmkuhl *et al.* 2006, p. 593). Fungi (mychorrhizal and epigeous types) are prominent in their diet; however, seeds, fruits, nuts, vegetation matter, insects, and lichens may also represent a significant proportion of their diet (summarized in Courtney *et al.* 2004, App. 4 p. 3–12). Northern flying squirrel densities tend to be higher in older forest stands with ericaceous shrubs (e.g., Pacific rhododendron (*Rhododendron macrophyllum*)) and an abundance of large snags (Carey 1995, p. 654), and higher tree canopy cover (Lehmkuhl *et al.* 2006, p. 591) likely because these forests produce a higher forage biomass. Wilson (2012, pp. i–ii) reported that dense mid-story canopy conditions can also be a limiting factor for flying squirrel abundance. Flying squirrel density tends to increase with stand age (Carey 1995, pp. 653–654; Carey 2000, p. 252), although managed and second-growth stands sometimes also show high densities of squirrels, especially when canopy cover is high (e.g., Rosenberg and Anthony 1992, p. 163; Lehmkuhl *et al.* 2006, pp. 589–591). The main factors that may limit northern flying squirrel densities are the availability of den structures and food, especially hypogeous (below ground) fungi or truffles (Gomez *et al.* 2005, pp. 1677–1678), as well as protective cover from predators (Wilson 2010, p. 115).

For northern spotted owls in Oregon, both dusky-footed and bushy-tailed woodrats are important prey items (Forsman *et al.* 2004, pp. 226–227), whereas in Washington owls rely primarily on the bushy-tailed woodrat (Forsman *et al.* 2001, p. 144). Habitats that support bushy-tailed woodrats usually include early-seral mixed-conifer/mixed-evergreen forests close to water (Carey *et al.* 1999, p. 77). Bushy-tailed woodrats reach high densities in both old forests with openings and closed-canopy young forests (Sakai and Noon 1993, pp. 376–378; Carey *et al.* 1999, p. 73), and use hardwood stands in mixed-evergreen forests (Carey *et al.* 1999, p. 73). Bushy-tailed woodrats are important prey species south of the Columbia River and may be more limited by abiotic features, such as the availability of suitable rocky areas for den sites (Smith 1997, p. 4) or the presence of streams (Carey *et al.* 1992, p. 234; 1999, p. 72). Dense woodrat populations in shrubby areas are likely a source of colonists to surrounding forested areas (Sakai and Noon 1997, p. 347); therefore, forested areas with nearby open, shrubby vegetation generally support high numbers of woodrats. The main factors that may limit woodrats are access to stable, brushy environments that provide food, cover from predation, materials for nest construction, dispersal ability, and appropriate climatic conditions (Carey *et al.* 1999, p. 78), and arboreal and terrestrial cover in the form of large snags, mistletoe, and soft logs (Lehmkuhl *et al.* 2006, p. 376).

Home Range and Habitat Use

Territorial northern spotted owls remain resident on their home range throughout the year; therefore, these homes ranges must provide all the habitat components needed for the survival and successful reproduction of a pair of owls. Northern spotted owls exhibit central-place foraging behavior (Rosenberg and McKelvey 1999, p. 1036), with much activity centered within a core area surrounding the nest tree during the breeding season. During fall and winter as well as in nonbreeding years, owls often roost and forage in areas of their home range more distant from the core. In nearly all studies of northern spotted owl habitat use, the amount of mature and old-growth forest was greater in core areas and home ranges than at random sites on the landscape (Courtney *et al.* 2004, pp. 5–6, 5–13; also see USFWS 2011, Appendix G for definitions of mature and old-growth forest), and forests were less fragmented within northern spotted owl home ranges (Hunter *et al.* 1995, p. 688). The amount of habitat at the core area scale shows the strongest relationships with home range

occupancy (Meyer *et al.* 1998, p. 34; Zabel *et al.* 2003, p. 1036), survival (Franklin *et al.* 2000, p. 567; Dugger *et al.* 2005, p. 873), and reproductive success (Ripple *et al.* 1997, pp. 155–156; Dugger *et al.* 2005, p. 871). A more complete description of the home range is presented in Population Spatial Requirements, below.

The size, configuration, and characteristics of vegetation patches within home ranges affect northern spotted owl survival and reproduction, a concept referred to as habitat fitness potential (Franklin *et al.* 2000, p. 542). Among studies that have estimated habitat fitness potential, the effects of forest fragmentation and heterogeneity vary geographically. In the California Klamath Province, locations for nesting and roosting tend to be centered in larger patches of old forest, but edges between forest types may provide increased prey abundance and availability (Franklin *et al.* 2000, p. 579). In the central Oregon Coast Range, northern spotted owls appear to benefit from a mixture of older forests with younger forest and nonforested areas in their home range (Olson *et al.* 2004, pp. 1049–1050), a pattern similar to that found in the California Klamath Province. Courtney *et al.* (2004, p. 5–23) suggest that although in general large patches of older forest appear to be necessary to maintain stable populations of northern spotted owls, home ranges composed predominantly of old forest may not be optimal for northern spotted owls in the California Klamath Province and Oregon Coast Ranges Province.

The northern spotted owl inhabits most of the major types of coniferous forests across its geographical range, including Sitka spruce (*Picea sitchensis*), western hemlock (*Tsuga heterophylla*), mixed conifer and mixed evergreen, grand fir (*Abies grandis*), Pacific silver fir (*A. amabilis*), Douglas-fir (*Pseudotsuga menziesii*), redwood (*Sequoia sempervirens*)/Douglas-fir (in coastal California and southwestern Oregon), white fir (*A. concolor*), Shasta red fir (*A. magnifica* var. *shastensis*), and the moist end of the ponderosa pine (*Pinus ponderosa*) zone (Forsman *et al.* 1984, pp. 15–16; Thomas *et al.* 1990, p. 145). Habitat for northern spotted owls has traditionally been described as consisting of four functional types: Nesting, roosting, foraging, and dispersal habitats. Recent studies continue to support the practical value of discussing northern spotted owl habitat usage by classifying it into these functional habitat types (Irwin *et al.* 2000, p. 183; Zabel *et al.* 2003, p. 1028; Buchanan 2004, p. 1334; Davis and Lint 2005, p. 21; Forsman *et al.* 2005, p. 372), and data from studies are available to describe areas used for these types of activities, so we retain it here to structure our discussion of the physical or biological features of habitat essential to the conservation of the northern spotted owl.

Recent habitat modeling efforts have also accounted for differences in habitat associations across regions, which have often been attributed to regional differences in forest environments and factors including available prey species (USFWS 2011, p. C–7). These recent advances allowed for modeling of northern spotted owl habitat by regions to account for: (1) The degree of similarity between nesting/roosting and foraging habitats based on prey availability; (2) latitudinal patterns of topology and climate; (3) regional patterns of topography, climate, and forest communities; and (4) geographical distribution of habitat elements that influence the range of conditions occupied by northern spotted owls (USFWS 2011, p. C–8). Detailed characterizations of each of these functional habitat types and their relative distribution are described in Physical or Biological Features, below.

Climate Change

There is growing evidence that recent climate change has impacted a wide range of ecological systems (Stenseth *et al.* 2002, entire; Walther *et al.* 2002, entire; Adahl *et al.* 2006, entire; Karl *et al.* 2009, entire; Moritz *et al.* 2012, entire; Westerling *et al.* 2011, p. S459; Marlon *et al.* 2012, p. E541). Climate change, combined with effects from past management practices, is exacerbating changes in forest ecosystem processes and dynamics to a greater degree than originally anticipated under the NWFP. Environmental variation affects all wildlife populations; however, climate change presents new challenges as systems may change beyond historical ranges of variability. In some areas, changes in weather and climate may result in major shifts in vegetation communities that can persist in particular regions.

Climate change will present unique challenges to the future of northern spotted owl populations and their habitats. Northern spotted owl distributions (Carroll 2010, entire) and population dynamics (Franklin *et al.* 2000, entire; Glenn *et al.* 2010, entire; *et al.* 2011a, entire; Glenn *et al.* 2011b, entire) may be directly influenced by changes in temperature and precipitation. In addition, changes in forest composition and structure as well as prey species distributions and abundance resulting from climate change may impact availability of habitat across the historical range of the subspecies. The Revised Recovery Plan for the Northern Spotted Owl provides a detailed discussion of the possible environmental impacts to the habitat of the northern spotted owl from the projected effects of climate change (USFWS 2011, pp. III–5 to III–11).

Because both northern spotted owl population dynamics and forest conditions are likely to be influenced by large-scale changes in climate in the future, we have attempted to account for these influences in our designation of critical habitat by recognizing that forest composition may change beyond the range of historical variation, and that climate changes may have unpredictable consequences for both Pacific Northwest forests and northern spotted owls. This critical habitat designation recognizes that forest management practices that promote ecosystem health under changing climate conditions will be important for northern spotted owl conservation.

III. Previous Federal Actions

The northern spotted owl was listed as a threatened species on June 26, 1990 (55 FR 26114); a description of the relevant previous Federal actions up to the time of listing can be found in that final rule. On January 15, 1992, we published a final rule designating 6,887,000 ac (2,787,000 ha) of Federal lands in Washington, Oregon, and California as critical habitat for the northern spotted owl (57 FR 1796). On January 13, 2003, we entered into a settlement agreement with the American Forest Resources Council, Western Council of Industrial Workers, Swanson Group Inc., and Rough & Ready Lumber Company, to conduct a 5-year status review of the northern spotted owl and consider potential revisions to its critical habitat (*Western Council of Industrial Workers (WCIW) v. Secretary of the Interior, Civ. No. 02–6100–AA (D. Or*). On April 21, 2003, we published a notice initiating the 5-year review of the northern spotted owl (68 FR 19569), and published a second information request for the 5-year review on July 25, 2003 (68 FR 44093). We completed the 5-year review on November 15, 2004, concluding that the northern spotted owl should remain listed as a threatened species under the Act (USFWS 2004, entire). On November 24, 2010, we published in the **Federal Register** a notice initiating a new 5-year review for the northern spotted owl (75 FR 71726); the information solicitation period for this review was reopened from April 20, 2011, through May 20, 2011 (76 FR

22139), and the completed review was signed on September 29, 2011, concluding that the northern spotted owl was appropriately listed as a threatened species.

In compliance with the settlement agreement in the *WCIW* case, as amended, we published a proposed revised critical habitat rule in the **Federal Register** on June 12, 2007 (72 FR 32450). On May 21, 2008, we published a notice announcing the availability of a Recovery Plan for the Northern Spotted Owl (73 FR 29471; May 21, 2008). We also announced the availability of a draft economic analysis on the proposed critical habitat designation and the reopening of the public comment period on the proposed revised critical habitat designation. The 2008 recovery plan formed the basis for the current designation of northern spotted owl critical habitat. We published a final rule revising the critical habitat designation in the **Federal Register** on August 13, 2008 (73 FR 47325).

Both the 2008 critical habitat designation and the 2008 recovery plan were challenged in court in *Carpenters' Industrial Council v. Salazar,* Case No. 1:08–cv–01409–EGS (D.DC). In addition, on December 15, 2008, the Inspector General of the Department of the Interior issued a report entitled ''Investigative Report of The Endangered Species Act and the Conflict between Science and Policy,'' which concluded that the integrity of the agency decision-making process for the northern spotted owl recovery plan was potentially jeopardized by improper political influence. As a result, the Federal Government filed a motion in the lawsuit for remand of the 2008 recovery plan and the critical habitat designation which was based on it. On September 1, 2010, the Court issued an opinion remanding the 2008 recovery plan to us for issuance of a revised plan within 9 months.

On September 15, 2010, we published a **Federal Register** notice (75 FR 56131) announcing the availability of the Draft Revised Recovery Plan for the Northern Spotted Owl, and opened a 60-day comment period through November 15, 2010. On November 12, 2010, we announced by way of press release an extension of the comment period until December 15, 2010. On November 30, 2010, we announced in the **Federal Register** the reopening of the public comment period until December 15, 2010 (75 FR 74073). At that time we also announced the availability of a synopsis of the population response modeling results for public review and comment. The supporting information regarding the modeling process was posted on our Web site (*http://www.fws.gov/oregonfwo/*). Of the approximately 11,700 comments received on the Draft Revised Recovery Plan, many requested the opportunity to review and comment on more detailed information on the habitat modeling process in Appendix C. On April 22, 2011, we reopened the comment period on Appendix C of the Draft Revised Recovery Plan (76 FR 22720); this comment period closed on May 23, 2011. On May 6, 2011, the Court granted our request for an extension of the due date for issuance of the final revised recovery plan until July 1, 2011. We published the notice of availability of the final Revised Recovery Plan for the Northern Spotted Owl in the **Federal Register** on July 1, 2011 (76 FR 38575).

On October 12, 2010, the Court remanded the 2008 critical habitat designation, which had been based on the 2008 Recovery Plan for the Northern Spotted Owl, and adopted the Service's proposed schedule to issue a new proposed revised critical habitat rule for public comment by November 15, 2011, and a final rule by November 15, 2012. The Court subsequently extended the date for delivery of the proposed rule to the **Federal Register** to February 28, 2012. A proposed revision to the designated critical habitat for the northern spotted owl was signed on February 28, 2012 and published in the **Federal Register** on March 8, 2012 (77 FR 14062), with a 3-month public comment period. On May 8, 2012, we announced an extension of the comment period through July 6, 2012 (77 FR 27010). A June 1, 2012 **Federal Register** notice announced the availability of the associated draft economic analysis and draft environmental assessment (conducted under NEPA), and invited the public to comment on these documents through July 6, 2012 (77 FR 32483). We held seven public information meetings and one public hearing. Two public information meetings were held each night in Redding, California, on June 4, 2012; in Tacoma, Washington, on June 12, 2012; and in Roseburg, Oregon, on June 27, 2012. One public information meeting was held in Portland, Oregon on June 20, 2012 and the public hearing was held in Portland, Oregon, on June 20, 2012. On July 20, 2012, the Service sent letters to all potentially affected Counties and State fish and wildlife agencies in Washington, Oregon and California advising them of the additional opportunity to comment until August 20, 2012, to ensure that they were able to thoroughly review and comment on the proposed rule as provided by Section 4(b)(5)(A)(ii) of the Act. In order to allow sufficient time for interagency review, the Court extended the time for delivery of the final rule to the **Federal Register** to November 21, 2012.

IV. Changes From the Proposed Rule

In preparing this final revised critical habitat designation for the northern spotted owl, we reviewed and considered comments from the public, peer reviewers, and other interested parties on the proposed revised designation of critical habitat published on March 8, 2012 (77 FR 14062). We also reviewed and considered comments on the draft environmental assessment and draft economic analysis. As a result of these comments and a reevaluation of the revised proposed critical habitat boundaries, we have made changes in this final designation, as follows:

(1) We responded to peer-review, public, stakeholder, and internal comments on a wide variety of topics to clarify and strengthen the supporting rationale of this final designation, clarify our meanings and descriptions, and to refine specific aspects of the rule to include emerging research or provide additional explanation. Included in these types of changes from the proposed to final rule are the following:

- Clarifications to the language to specify that northern spotted owl occupancy data are not needed or appropriate for an analysis of the effects of an action on northern spotted owl critical habitat.
- Clarifications to the language to more clearly describe the potential management of hazard trees in critical habitat along roadways.
- In the Special Management Considerations section, we reference Recovery Action 10 from the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011), which focuses on retaining existing northern spotted owls on the landscape. We have edited those references to clarify that management of critical habitat and the section 7 evaluation under the Act that management should focus on the habitat's ability to support nesting northern spotted owls instead of focusing on individual northern spotted owls.
- To determine how to conduct those evaluations under section 7 of the Act, the proposed revised critical habitat recommended assessing the impacts of a timber management project in the context of 500 ac (200 ha) around where the impacts would occur. After numerous discussions with section 7 practitioners in different parts of the

range of the species, we are recommending that the effects determination for a section 7 consultation be conducted at a scale consistent with ''the localized biology of the life-history needs of the northern spotted owl (such as the stand scale, a 500-acre (200-ha) circle, or other appropriate, localized scale).'' Please see detailed discussion of the distinction between effects determination and the adverse modification standard in the section *Determinations of Adverse Effects and Application of the ''Adverse Modification'' Standard.*

• We have clarified that our discussion of ecological forestry and active management is intended for land managers to consider when developing management plans or planning projects, as in many areas this approach may be consistent with critical habitat for the northern spotted owl, but that such management is not mandated by the Service and is not required as the result of this rulemaking. We have also clarified this issue in the final rule language by stating that we have made the 16 U.S.C. 1532(5)(A)(i) determination that essential biological and physical features in occupied areas may require special management considerations or protection, but that the rule does not require land managers to implement, or preclude land managers from implementing, such measures.

• We have provided land managers with a discussion of relevant emerging science and greater detail regarding the appropriate application of active management and ecological forestry to benefit forest ecosystem restoration, as recommended in the Revised Recovery Plan for the Northern Spotted Owl. In addition, we received extensive comments regarding the appropriateness of developing diverse early-seral forest at the expense of older forest stands. We have clarified language regarding development of diverse, early-seral forest to indicate that: (1) We do not recommend these actions in older forest stands or areas that currently function as owl habitat; and (2) this type of management is most appropriate where more traditional forestry methods have typically been conducted on matrix lands. As stated in both the proposed rule and in this final rule, our first recommendation for northern spotted owl critical habitat is the conservation of old growth trees and forests on Federal lands wherever they are found, and to undertake appropriate restoration treatment in the threatened forest types.

• We have clarified the relationship between this revised designation of critical habitat for the northern spotted owl and the Northwest Forest Plan. Numerous commenters were concerned that this critical habitat would undermine the Standards and Guidelines of the Northwest Forest Plan, or enable timber harvest activities in Late-Successional Reserves that would not otherwise be permissible. We have added language to the preamble to clarify that the revised designation of critical habitat does not supersede the Standards and Guidelines of the Northwest Forest Plan. Our discussion of potential active management within critical habitat is intended to encourage land managers to consider the range of management flexibility already contained in the Northwest Forest Plan.

(2) In the proposed rule we requested specific information regarding the amount and distribution of northern spotted owl habitat that should be included in the designation. We refined the designation based on input from peer-review, public comment, and comments from Federal land management agencies, combined with further evaluation of modeled population response to the potential revisions of the critical habitat network, and including the following.

(A) Formal comments from the Forest Service requested that we consider large numbers of specific areas to be removed from, or added to, critical habitat, submitted to us in the form of GIS data. This proposal would have greatly reduced matrix lands in moist forest areas (Western Cascades, Oregon Coast Range, and North Coast Olympics) and eliminated Adaptive Management Areas and Experimental Forests from critical habitat. In addition, BLM requested removal of approximately 300,000 acres of selected BLM lands in western Oregon. We evaluated a new map of relative habitat suitability (Composite 8, as described in our Modeling Supplement, Dunk *et al.* 2012b) that incorporated all of these requested changes. Population modeling results for Composite 8 indicated that many of the lands proposed for removal were essential to conservation of the northern spotted owl because the rangewide population declined by 39 percent and population risk increased by 44 percent. To bring the spotted owl population results back up to levels comparable to proposed critical habitat, the final critical habitat designation includes areas recommended by those agencies for elimination (and that had been removed in our test of Composite 8) because we determined they are essential to the conservation of the species. To increase efficiency and ensure that the designation included only occupied habitat containing the features essential to conservation or habitat that is otherwise essential to the species' conservation, we further refined the boundaries of some subunits by moving the boundaries to include more high-value habitat while simultaneously and less lower-value habitat in the network. To the greatest degree possible, wherever possible we removed matrix lands and incorporated habitat in LSRs in this process.

(B) In response to peer review comments about connectivity and population issues we identified specific areas providing high-suitability habitat that were required to better achieve population objectives in specific lower-performing modeling regions. The additional areas consisted solely of Federal lands, primarily USFS LSR lands, that were essential to provide connectivity between populations in the Oregon Coast Ranges and adjacent regions with larger spotted owl populations, as pointed out in peer review and public comments, and supported by results of population modeling. In many cases, areas added were specifically identified by the USFS or BLM as lands that should be added to compensate for removal of other, lower value lands. To the degree possible, we attempted to situate additions within LSRs and balanced additions by removing lower-quality areas in matrix land allocations. In some cases, additions were made to balance areas removed in (A) above. No additional State or private lands were designated in this process, and all areas are within the critical habitat units as described in the proposed rule.

The changes described in (A) and (B) above had the desired effect of bringing population results back up to levels similar to proposed critical habitat, while simultaneously reducing the area of matrix and lower-quality habitat in the designation thus ensuring that only essential habitat is designated. Overall, about 318,296 acres of BLM and USFS lands were removed from critical habitat, 74 percent (236,887 acres) of which were matrix lands of relatively lower value to northern spotted owls.

(C) We identified and removed lands based on information we received during the public comment period indicating that they did not meet the definition of critical habitat. In general, lands removed had recently lost their ability to function as northern spotted owl habitat either through stand-replacing wildfire or through timber harvest conducted after 2006 (the date of our most recent comprehensive vegetation layer). When such lands were identified, we removed them from critical habitat because they were unlikely to support northern spotted owls, and did not contain the PCEs or could not be otherwise considered essential.

(D) We further refined the critical habitat boundaries to better conform to identifiable landscape features or administrative boundaries, and to improve consistency with our goal of prioritizing high value Federal lands to include in critical habitat while removing relatively lower value lands in all ownerships. The USFS provided a number of specific suggestions in their public comment for this type of refinement. Overall, these refinements resulted in a small net reduction of critical habitat area.

(E) Correcting ownership boundary errors identified in peer-review and public comment. When the underlying land ownership was corrected, we determined that some lands originally labeled as private lands were in fact Federal or State lands.

In the State of Washington, in response to public comment and upon

further review using the underlying aerial photo imagery from the 2011 National Agricultural Imagery Program (NAIP) and Ruraltech's 2007 forestland parcel data, we determined that the vast majority of Small Forest Landowner parcels we examined had either highly fragmented, little, or no northern spotted owl habitat currently present. Based on the combination of parcel size, current habitat conditions, and spatial distribution, we concluded that private lands identified as Small Forest Landowner parcels in the State of Washington do not provide the PCEs for northern spotted owls, nor are they essential to the conservation of the species; thus, these areas do not meet the definition of critical habitat, and we have removed them from the final designation of critical habitat.

Also in the State of Washington, we corrected ownership of Washington Department of Fish and Wildlife (WDFW) lands. In the proposed rule, we identified 1,752 ac (709 ha) as under the ownership of WDFW. In this rule, we have corrected this acreage to 8,328 ac (3,370 ha). This correction reflects a land transfer between WDFW and the Washington Department of Natural Resources, as well as a mistaken usage of a mineral rights GIS layer instead of a landownership layer.

Additional changes that were made were minor and included corrections of mapping errors, removing lower value areas that were inadvertently included, or correctly identifying administrative boundaries. Changes in total area are detailed in Table 1, below, and are shown by land ownership.

TABLE 1—LANDS IN THE PROPOSED REVISED CRITICAL HABITAT DETERMINED NOT TO CONTAIN THE PHYSICAL AND BIOLOGICAL FEATURES ESSENTIAL TO CONSERVATION OF THE NORTHERN SPOTTED OWL OR NOT OTHERWISE ESSENTIAL TO ITS CONSERVATION AND THEREFORE NOT INCLUDED IN FINAL CRITICAL HABITAT

State	Ownership	Acres	Hectares
Washington	USFS	11,864	4,793
Oregon	USFS	55,788	22,538
	BLM	62,862	25,396
	STATE	14,114	5,702
California	USFS	64,114	25,902
	BLM	17,152	6,929
Total		225,894	91,261

(3) We have exempted 14,313 ac (5,782 ha) of Department of Defense lands at Joint Base Lewis-McChord in Washington from critical habitat for the northern spotted owl, in accordance with section 4(a)(3) of the Act (see Exemptions). These lands comprised subunit NCO–3 in the proposed revision of critical habitat, and represented the only entirely unoccupied unit of critical habitat proposed for the northern spotted owl.

(4) In the proposed revised rule (77 FR 14062; March 8, 2012), we identified numerous areas under consideration for exclusion from the final designation, and solicited public comment on whether the benefits of exclusion of these lands would outweigh the benefits of inclusion, for example, based on active conservation agreements or conservation plans. We did a thorough evaluation of all the areas identified in the proposed rule, as well as others identified through our review and through information received from the public, and found that the benefits of exclusion for many of these areas outweighed the benefits of inclusion in critical habitat and that excluding these areas will not lead to the extinction of the species. Therefore, the Secretary is exercising his discretion to exclude specific areas covered under conservation agreements, programs, and partnerships under section 4(b)(2) of the Act (see Exclusions section of this document). The total area excluded from the final critical habitat designation under section 4(b)(2) of the Act are given in Table 2, below, again shown by land ownership.

TABLE 2—AREAS EXCLUDED FROM FINAL CRITICAL HABITAT UNDER SECTION 4(b)(2) OR EXEMPTED UNDER SECTION 4(a)(3) OF THE ACT

State (Ownership)	Proposed area (ac)	Proposed area (ha)	Final area (ac)	Final area (ha)	Excluded or exempted (ac)	Excluded or exempted (ha)
Washington:						
USFS	3,601,564	1,455,032	2,909,739	1,177,528	680,197	274,800
NPS	835,510	337,546	0	0	835,510	337,546
Other Federal (Joint Base Lewis-McChord; 4(a)(3) exemption)	14,313	5,782	0	0	14,313	5,782
STATE	226,708	91,590	8,328	3,370	218,380	88,225
PRIVATE	178,310	72,037	0	0	178,310	72,037
Oregon: *						
USFS	3,555,630	1,436,475	3,114,637	1,260,448	458,965	185,422
BLM	1,297,529	524,202	1,230,417	497,932	25,785	10,417
NPS	35,161	14,205	0	0	35,161	14,205
STATE	228,733	92,408	212,798	86,116	0	0
California:						
USFS	2,367,916	956,638	1,933,411	782,423	389,387	157,312
BLM	186,082	75,177	98,195	39,738	70,735	28,577
NPS	127,913	51,677	0	0	127,913	51,677
STATE	215,333	86,995	70,444	28,508	144,889	58,487

TABLE 2—AREAS EXCLUDED FROM FINAL CRITICAL HABITAT UNDER SECTION 4(b)(2) OR EXEMPTED UNDER SECTION 4(a)(3) OF THE ACT—Continued

State (Ownership)	Proposed area (ac)	Proposed area (ha)	Final area (ac)	Final area (ha)	Excluded or exempted (ac)	Excluded or exempted (ha)
PRIVATE	1,091,747	441,066	0	0	1,091,747	441,066
Grand Totals	13,962,449	5,640,829	9,577,969	3,876,064	4,271,291	1,725,553

(* Please note that no private lands in Oregon were proposed or included in this final designation.)

Note the difference in area between the proposed and final rules will not align exactly with the sum total of areas removed because they did not meet the definition of critical habitat and areas excluded or exempted from the final designation. Some minor discrepancies in area are due to mapping errors in the proposed designation have been corrected here, and may not be readily apparent through simple addition or subtraction of the total areas identified under various land categories. For example, the proposed rule mistakenly identified 16,031 ac (6,487 ha) of lands under the ownership of SDS and Broughton Lumber Companies in Washington as under consideration for exclusion. The accurate area included within the proposed critical habitat was, in fact, 2,035 ac (824 ha), and it is that area, which was excluded from this final designation, reflected in this final rule. The difference of nearly 14,000 ac (5,655 ha) will not be reflected in the difference between areas proposed and areas excluded in the final rule, as it was not really in the proposed critical habitat to begin with (and thus, was not excluded).

The number of subunits in the final critical habitat designation have changed as a result of exclusions under section 4(b)(2) or exemptions under section 4(a)(3). There were 11 critical habitat units and 63 subunits in the proposed rule. Eleven critical habitat units and 60 subunits comprise the final designation. In the North Coast Olympics, subunit NCO–3, composed entirely of Department of Defense lands at Joint-Base Lewis McChord, was exempted from the final designation under section 4(a)(3) of the Act (see Exemptions). In the Redwood Coast Region, subunits RDC–3 and RDC–4 were made up of private lands excluded under section 4(b)(2) of the Act (see Exclusions).

(5) Not all areas identified for potential exclusion in the proposed revised rule were excluded from the final designation. Based on the best available scientific information, we have found that the benefits of excluding other areas proposed or considered for exclusion do not outweigh the benefits of including them in the designation for the reasons discussed below. Therefore, the Secretary has determined not to exercise his discretion to exclude these lands. These areas are identified in Table 3 and are discussed further, below.

TABLE 3—LANDS THAT WERE PROPOSED FOR EXCLUSION, OR OTHERWISE CONSIDERED FOR EXCLUSION, WHICH ARE RETAINED IN THE FINAL CRITICAL HABITAT DESIGNATION FOR THE NORTHERN SPOTTED OWL

Type	State	Landowner	Acres	Hectares
State Lands	WA	Washington Department of Fish and Wildlife Lands [1]	8,328	3,370
State Lands	OR	Oregon Department of Forestry	212,798	86,116
State Lands	CA	California State Forests	49,760	20,137
	CA	Local Government Lands [2]	20,684	8,371
Total			291,570	117,994

(a) State, County, and Municipal Lands Not Excluded.

California

We retained a relatively limited area of State, County, and municipally owned or managed lands in California. Retained areas include lands managed as State Forests, County Parks, and a Municipal Water District. No habitat conservation plans (HCPs) or sage harbor agreements (SHAs) are currently in place on these lands. Most of these lands are in areas that have repeatedly been identified as critical to maintaining linkages among northern spotted owl populations in California. These State and County lands play an essential conservation role in this area of limited Federal ownership. Retaining these lands in the critical habitat designation promotes movement of northern spotted owls, and maintains the potential for genetic interchange. Including these lands would increase the awareness of State, County and local agencies about the status of and threats to spotted owls, the conservation actions needed for recovery, and the essential conservation role this habitat plays. It also increases the potential for educating visitors to State Forests and County Parks and Open Space areas about northern spotted owl conservation needs. Excluding these lands would have little impact on regulatory burdens because (a) current management of these lands is generally consistent with maintenance of habitat values, limiting the potential for adverse effects to critical habitat, and (b) management activities typically do not involve a Federal nexus. Therefore, the Secretary has chosen not to exclude the following California State, County, or municipal lands from the final designation of critical habitat for the northern spotted owl:

California Demonstration State Forests—Two California State Forests are included in the final critical habitat designation: (1) Jackson Demonstration State Forest (DSF), within subunit 2 in the Redwood Coast CHU in Mendocino County, California; and (2) Las Posadas DSF within subunit 6 of the Interior Coastal California CHU in Napa County, California. The California Department of Forestry and Fire Protection (CALFIRE) requested that the Jackson DSF be

excluded from the final critical habitat designation for the northern spotted owl.

CALFIRE developed the Las Posadas DSF Management Plan (California Department of Forestry and Fire Protection, 1992) for the Las Posadas DSF and characterizes current management on the forest as ''custodial.'' Goals for fish and wildlife under the plan include maintenance of the ''* * * Forest's status as one of the last relatively undisturbed fish and wildlife habitats in Napa County.'' However, the management plan is quite dated, having been approved in 1992. There is acknowledgment of the presence of northern spotted owl activity sites in the management plan, but no specific provisions for owl management or conservation actions in the plan. There have been no publicly-available amendments or updates to the plan since its enactment in 1992 and the timeframe in which any revisions to the plan may take place is uncertain. The designation of critical habitat on these lands would perform an important educational function in highlighting their essential role in owl conservation as the State updates its plan and conducts management activities. Habitat within the plan area is not typical forested habitat often associated with the northern spotted owl but includes oak woodlands and grasslands in this southern part of the species range and represents a unique ecological setting for the species; the educational benefit of including this area in critical habitat is therefore high, as landowners may not be aware that the northern spotted owl inhabits this atypical habitat type. After reviewing the information available, we find that the benefits of including these areas as critical habitat will assist in maintaining linkages and movement among and between northern spotted owl populations, and heightening the awareness and educating visitors of the conservation role this habitat plays for recovery of the northern spotted owl. As a result we are not excluding the areas designated as critical habitat within the Las Posadas DSF.

CALFIRE has also developed a management plan for the Jackson DSF (Jackson Demonstration State Forest Management Plan (dated January 2008) and CALFIRE has requested that the area be excluded from the final designation. In their request for exclusion CALFIRE stated that the designation of the Jackson DSF as critical habitat was unnecessary given: (1) Extensive conservation planning and environmental assessment has already been completed for the area; (2) the designation would potentially have negative impacts on the mission of the Jackson DSF on implementing restoration and research projects; (3) that the draft economic analysis for the proposed critical habitat concluded that the designation would not affect timber harvest on State lands; and (4) designation does not provide meaningful wildlife benefits any different from those already in place.

The Service responds, as follows, to the four elements in CALFIRE'S request for exclusion. (1) While there are efforts by CALFIRE in the development of a forest management plan and environmental assessment for the Jackson DSF, the plan does not specifically provide for northern spotted owl conservation. We believe that the Jackson DSF Management Plan (CALFIRE, 2008) could provide potential benefits to the northern spotted owl, in that there is a high likelihood that land allocations stated in the plan, along with the long-term desired conditions for forest composition will improve habitat over time. However, we find that: (a) Existing management direction in the Plan relating to the northern spotted owl is vague; (b) the stated conservation policy for the owl is limited to a take-avoidance strategy; and (c) while CALFIRE collects monitoring data on northern spotted owl activity sites on a continuous basis, there is no apparent strategy for evaluating that information or applying it to the benefit of the species. The only overt policy statement in the 2008 Plan regarding the northern spotted owl states that ''* * * forest management objectives * * * are to maintain or increase the number and productivity of nesting owl pairs through forest management practices that enhance nesting/roosting opportunities and availability of a suitable prey base.'' The terms ''maintain'' and ''increase'' are not supported with measurable standards or targets; and there are no remedial measures or mechanisms in the 2008 Plan that are triggered by a decrease in activity sites or demographic productivity. The northern spotted owl conservation strategy in the 2008 Plan is predicated on take-avoidance (CALFIRE 2008, pp. 109 and 267). Take avoidance alone is not a sufficient conservation strategy and it will not necessarily satisfy CALFIRE's direction to maintain or increase owl activity sites or demographic performance. If there are local variations in the ''true'' optimal forest conditions that support owl occupancy, strict adherence to the take-avoidance provisions may not be satisfactory and occupancy rates may decrease, and there are no corrective mechanisms in the 2008 Plan to account for this possibility. This dual problem of the suitability and occupancy of activity sites is further complicated by barred owl intrusion, and likewise is not addressed by total reliance on a take-avoidance strategy. In addition, in the monitoring chapter for the 2008 Plan we find that there is continuous monitoring of northern spotted owl activity sites (CALFIRE 2008, p. 149), but it is not spelled out in detail. (For example, it does not include the detail and adaptability (i.e., adaptive management provisions) as are specified for instream conditions and fisheries (CALFIRE 2008, pp. 153–154). In addition, the 2008 Plan does not appear to contain guidance on how to process, evaluate, and interpret the continuous data that is currently being collected on northern spotted owl activity sites, or on how to apply that information to agency decision-making in the event that activity sites and demographic performance are not maintained or increased under the existing management direction. In summary, although the 2008 Jackson DSF Management Plan can potentially produce positive long-term outcomes for the northern spotted owl, it contains an incomplete conservation plan for the species.

(2) We do not agree with CALFIRE's contention that the designation would potentially have negative impacts on its ability to implement restoration and research projects. The fact that a Federal agency (i.e., U.S. Forest Service) is a research cooperator does not, by itself, create a section 7 nexus. The Service contacted the senior Forest Service scientist connected with the research program at Jackson DSF who described the Forest Service research activities as simply a scientific examination of the State's proposed actions. At this time, we see no Federal regulatory mechanism in connection with the Jackson DSF's existing cooperative research program that would trigger consultation under section 7 of the Act. Therefore, we believe any regulatory burden from designation would be minimal.

(3) The Service agrees with CALFIRE's observation, in their July 6, 2012 correspondence, that the economic analysis rightly concluded that critical habitat designation would have no effect on Jackson DSF harvest levels. The only potential effect on harvest schedules would occur if Federal permits or grants-of-funds were connected to the harvest activity.

(4) We disagree with CALFIRE's position that ''designation would

provide no meaningful wildlife benefits from those already in place.'' Our response to item 1, above, indicates that there are potentially meaningful informational benefits that may assist implementation of the existing Jackson DSF Management Plan. We believe designating these lands as critical habitat would serve a very important informational function as the management plan is implemented; it would highlight the fact that this habitat is essential to the conservation of the northern spotted owl.

While acknowledging that the 2008 Management Plan contains many features that have the potential to benefit the northern spotted owl over the long term, and also recognizing that there several remediable omissions in that Plan, the Secretary has elected not to exclude Jackson Demonstration State Forest from critical habitat designation under section 4(b)(2) of the Act because we believe that the educational and informational benefits of inclusion outweigh the benefits of exclusion.

Mount Tamalpais Municipal Watershed of the Marin Municipal Water District—We are not excluding the Mount Tamalpais Watershed (Watershed) from critical habitat designation. The Watershed (18,500 ac (7,487 ha)) is administered by the Marin Municipal Water District (MMWD) in Marin County, California. The Watershed is flanked on all sides by public parks, county-administered open space areas, grazing land, and residential areas within the triangle formed by U.S. Highway 101, California State Route 1 and Sir Francis Drake Boulevard. The MMWD currently does not operate under a conservation plan such as an HCP or SHA.

A key management consideration for the MMWD is the practical need to limit sediment delivery thereby extending the service life of the five reservoirs within the Watershed (Kent, Alpine, Bon Tempe, Lagunitas, and Phoenix Lakes). To that end, the policy of the MMWD is to maintain land in a natural condition and limit human activities to those that have the least impact on the Watershed. Within specified constraints, permitted public activities include hiking, bicycling, horseback riding, fishing and picnicking. Camping, swimming and boating are prohibited. There is limited public motor vehicle access into the Watershed on Panoramic Highway, Ridgecrest Boulevard and the Fairfax-Bolinas Road. These roads mostly access scenic vistas and day use areas around the reservoirs. The remainder of the road network in the Watershed is dedicated for firefighter access and administrative use, and is closed to public motor vehicles. The MMWD has produced several current management plans addressing specific subject areas, including public access, vegetation management, road and trail management, and long term fire and fuels management. Several elements in those plans are compatible with long-term northern spotted owl conservation. However, there is no explicit discussion about long-term owl management in any of the MMWD's planning documents. The upcoming Vegetation Management Plan (projected in 2013) may provide additional information that is relevant to northern spotted owl habitat management. We are not aware of any substantial benefits to excluding these areas from critical habitat and find that there would be significant educational benefits to including them in the designation in that it would highlight the significance this area has for northern spotted owl conservation in future planning efforts.

Marin County Parks and Open Space Department—We have included in the designation six Open Space Preserves (OSPs) totaling 3,626 ac (1,467 ha) administered by the Marin County (California) Parks and Open Space Department (Department). We have designated three contiguous OSPs adjacent to the Mount Tamalpais Watershed and south of the communities of Lagunitas and Fairfax including Gary Giacomini (1,476 ac (597 ha)), White Hill (390 ac (158 ha)), and Cascade Falls (498 ac (202 ha)). We have also designated three contiguous OSPs adjacent the Watershed and west of the community of Corte Madera including Baltimore Canyon (193 ac (78 ha)), Blithedale Summit (899 ac (364 ha), and Camino Alto (170 ac (69 ha). The Parks Department currently does not operate under a conservation plan such as an HCP or SHA.

Park management emphasizes non-motorized public use. Five of the six OSPs are served only by fire roads that are closed to public motor vehicle access. The exception is the Camino Alto OSP which is flanked on the east by a public street. Several land management elements in the park system strategic plan (Marin County Parks and Open Space Department, 2008) are compatible with northern spotted owl. However, there is no explicit discussion about long term owl management in this planning document. We are not aware of any substantial benefits to excluding these areas from critical habitat and find that there would be significant educational benefits to including them in the designation.

Sonoma County Regional Parks Department—Lands within Hood Mountain Regional Park, administered by the Sonoma County (California) Regional Parks Department (SCRPD), are included in the designation in subunit 6 of the Interior California Coast CHU. The proposed critical habitat designation includes all, or portions of, four assessor's parcels totaling 460 ac (186 ha) within the park boundary. The SCRPD does not operate under an HCP or SHA.

Hood Mountain Regional Park is minimally roaded; the Sonoma County General Plan of 2008 indicates a modest program of trail construction and management within the countywide regional parks system. Public information materials, along with maps showing the local road network, and the types and locations of facilities within Hood Mountain Regional Park, indicate that the SCRPD is emphasizing non-motorized recreation and protection of undeveloped land. Through public information sources in Sonoma County, we located a mission statement for the SCRPD but were unable to find any planning or guidance documents to indicate how the regional parks system would be managed over the long term. The absence of planning direction and the reasons for inclusion are similar to those for the Marin Municipal Water District and for the Marin County Parks and Open Space Department. We are not aware of any substantial benefits to excluding these areas from critical habitat and find that there would be significant educational benefits to including them in the designation.

Oregon

In Oregon, we considered excluding 228,733 ac (92,565 ha) of State lands managed by the Oregon Department of Forestry (ODF). These lands contain both demographically productive sites for northern spotted owls and provide connectivity linkages among northern spotted owl populations in the Oregon Coast and North Coast-Olympic Modeling Regions. These lands are not currently managed under any sort of conservation plan or agreement with the Service, but are managed by ODF for multiple benefits including commodity production.

The State of Oregon has indicated that the designation of their lands as critical habitat would have ''virtually no impact—positive or negative * * *'' on either the management of their lands or their ability to pursue HCPs, SHAs or other conservation agreements (ODF *in litt.*). This is because there is rarely a Federal nexus that would trigger Service regulatory authority, such as the section

7 consultation process and the adverse modification analysis. Thus, there would be little negative impact of including State lands in the critical habitat designation.

Inclusion of these lands in the critical habitat designation highlights their essential conservation role and provides opportunities for educating visitors to these areas, nearby landowners, and ODF about the potential conservation contribution of these lands to northern spotted owls. If ODF were to pursue some sort of conservation agreement, this critical habitat designation would provide a blueprint not only for the lands that would be essential to include in such an effort but also the types of management that would be appropriate there. If ODF does not pursue such an effort this designation clearly indicates the value of these lands for the conservation of the northern spotted owl. We believe the value of the information included in the designation would provide an opportunity for management direction that focuses on benefits to the species.

Because we are unaware of any negative impacts of including these ODF lands, the benefits of exclusion do not outweigh the benefits of inclusion for these lands, and the Secretary has chosen not to exercise his discretion to exclude these State of Oregon lands from the final designation.

Washington

In Washington we proposed or considered excluding 226,869 ac (91,811 ha) of State lands managed by the Washington Department of Natural Resources (225,013 ac; 91,059 ha), Washington State Parks (104 ac; 42 ha), and Washington Department of Fish and Wildlife (8,328 ac; 3,370 ha). We excluded the lands managed by the Washington Department of Natural Resources from the final designation based on their HCP, and excluded 104 ac (42 ha) of State Parks and Department of Fish and Wildlife Lands (see Exclusions). We retained 8,328 ac (3,370 ha) of State-owned lands managed by the State Department of Fish and Wildlife for wildlife habitat in the final designation. No conservation agreements are currently in place on these lands, but some could be covered by an HCP which is currently under development. Most of these lands are located in the central Cascades in an area that has repeatedly been identified as critical to maintaining linkages among spotted owl populations in Washington. These State lands play an essential conservation role in this area of limited or checkerboard Federal ownership. Retaining these lands in the critical habitat designation promotes movement of northern spotted owls between the northern and southern Cascades Range, as well as between the western and eastern slopes of the Cascades. Including these State lands would increase the awareness of State agencies about the essential conservation role these lands play and the conservation actions needed for recovery. Excluding these lands would impose little regulatory burden because (a) management of these lands is consistent with maintenance of habitat values, limiting the potential for adverse effects to critical habitat, and (b) management activities typically do not involve a Federal nexus. Therefore, the Secretary has chosen not to exercise his discretion to exclude lands managed by the Washington Department of Fish and Wildlife from the final designation of critical habitat for the northern spotted owl.

Summary of Changes From the Proposed Rule

The areas identified in this final rule constitute a revision from the areas we designated as critical habitat for the northern spotted owl in 2008 (August 13, 2008; 73 FR 47326), which was a revision of the areas we initially designated as critical habitat for the northern spotted owl in 1992 (January 15, 1992; 57 FR 1796; see Changes from Previously Designated Critical Habitat, below). This final rule supersedes and replaces both of these earlier designations. The changes to the proposed revised critical habitat designation identified above result in a final designation of 9,577,969 ac (3,876,064 ha), a decrease of 4,197,484 ac (1,689,072 ha) from the 13,962,449 ac (5,649,660 ha) identified as meeting the definition of critical habitat in the March 8, 2012 (77 FR 14062) proposed rule (Table 4, below).

TABLE 4—DIFFERENCES BETWEEN PROPOSED AND FINAL REVISED CRITICAL HABITAT. TOTALS MANY NOT SUM DUE TO ROUNDING (ROUNDED TO NEAREST 100 UNITS). SMALL DIFFERENCES BETWEEN THE PROPOSED AND FINAL REVISED CRITICAL HABITAT THAT ARE NOT NOTED AS ADDITIONS OR DELETIONS ARE THE RESULT OF CORRECTIONS OF THE GIS MAP AND ROUNDING ERROR

Critical habitat unit	Proposed acres	Proposed hectares	Final acres	Final hectares
East Cascades North	1,919,469	775,465	1,345,523	544,514
East Cascades South	526,810	212,831	368,381	149,078
Inner California Coast Ranges	1,276,450	515,686	941,568	381,039
Klamath East	1,111,679	449,118	1,052,731	426,025
Klamath West	1,291,606	521,809	1,197,389	484,565
North Coast Olympic	1,595,821	644,712	824,500	333,663
Oregon Coast Ranges	891,154	360,026	859,864	347,975
Redwood Coast	1,550,747	626,502	180,855	73,189
West Cascades Central	1,353,045	546,630	909,687	368,136
West Cascades North	820,832	331,616	542,274	219,450
West Cascades South	1,624,836	656,434	1,355,198	548,429
Total	13,962,449	5,640,829	9,577,969	3,876,064

V. Changes From Previously Designated Critical Habitat

In 2008, we designated 5,312,300 ac (2,149,800 ha) of Federal lands in California, Oregon, and Washington as critical habitat for the northern spotted owl (73 FR 47326; August 13, 2008). In this revision, we are designating 9,577,969 ac (3,876,064 ha) as critical habitat for the northern spotted owl. We have revised the designation of critical habitat for the northern spotted owl to be consistent with the most current assessment of the conservation needs of the species, as described in the 2011 Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011, Appendix B). In this final designation, 4,085,808

ac (1,653,468 ha) are the same as in the 2008 designation. Of the current designation, 5,679,162 ac (2,298,275 ha) are lands not formerly designated in 2008, and 1,229,119 ac (497,405 ha) of lands that were included in the former designation are not included here, for reasons detailed below.

This revision of critical habitat represents an increase in the total land area identified from previous designations in 1992 and 2008. This increase in area is due, in part, to: (a) The unanticipated steep decline of the northern spotted owl and the impact of the barred owl, requiring larger areas of habitat to maintain sustainable spotted owl populations in the face of competition with the barred owl (e.g., Dugger *et al.* 2011, p. 2467); (b) the recommendation from the scientific community that the conservation of more occupied and high-quality habitat is essential to the conservation of the species (Forsman *et al.* 2011, p. 77); (c) the need to provide for redundancy in northern spotted owl populations, by maintaining sufficient suitable habitat for northern spotted owls on a landscape level in areas prone to frequent natural disturbances, such as the drier, fire-prone regions of its range (in other words, ''back-up'' areas of habitat so that owls have someplace to go if their habitat burns or trees die due to insect infestation, etc.) (Noss *et al.* 2006, p. 484; Thomas *et al.* 2006, p. 285; Kennedy and Wimberly 2009, p. 565); and (d) in contrast to the previous critical habitat designation, the inclusion of some State lands in areas where Federal lands are not sufficient to meet the conservation needs of the northern spotted owl.

The new delineation of areas determined to provide the physical or biological features essential for the conservation of the northern spotted owl, or otherwise determined to be essential for the conservation of the species, was based, in part, on an improved understanding of the forest characteristics and spatial patterns that influence habitat usage by northern spotted owls which were incorporated into the latest population evaluation and mapping technology. The modeling process we used to evaluate alternative critical habitat scenarios differed fundamentally from the conservation planning approach used to inform the 1992 and 2008 designations of critical habitat for the northern spotted owl. These past designations relied on *a priori* (predefined) rule sets derived from the best scientific information and expert judgment available at that time regarding the size of reserves or habitat conservation blocks, target number of spotted owl pairs per reserve or block, and targeted spacing between reserves or blocks (USFWS 2011, p. C–4), which we then assessed and refined based on local conditions. This revised designation reflects our use of a series of spatially explicit modeling processes to determine those specific areas where biological features are essential to the conservation of the northern spotted owl, and in the case of unoccupied habitat, to determine the areas that are otherwise essential to the conservation of the owl, as described in Criteria Used to Identify Critical Habitat. These models enabled us to compare potential critical habitat scenarios in a repeatable and scientifically accepted manner (USFWS 2011, p. C–4), using current tools that capitalize on new spatial information and algorithms (rule sets to solve problems) for identifying the most efficient habitat network containing what is essential for conservation.

The areas designated are lands that were occupied at the time of listing and that currently provide suitable nesting, roosting, foraging, or dispersal habitat for northern spotted owls, or that are otherwise essential to the conservation of the species. However, as noted above, not every site of known owl occupancy, either at present or at the time of listing, is included in the designation. We did not include owl sites if they were isolated from other known occurrences or in areas of marginal habitat quality such that they were unlikely to make a significant contribution to the conservation of the species, and therefore were not considered to provide the essential features.

The critical habitat network development and evaluation strategy we used attempted to maximize the efficiency of the network by prioritizing Federal lands. Utilization of new scientific information and advanced modeling techniques accounts for many of the changes in the revised critical habitat; in particular, the location of areas essential to northern spotted owls may have shifted from previous designations based on the best information available regarding the spatial distribution of high-value habitat. These advances include improvements in remotely-sensed vegetation data, use of models that better identify spatial configurations of habitat features important to owls, and assessment of relative population performance of northern spotted owls under different critical habitat designations. In addition, negative effects of barred owls on northern spotted owl populations were incorporated into the modeling process.

Late-successional reserves (LSRs) were not prioritized in this approach based solely on their status as a reserved land allocation, but were included in the 2012 designation only where the habitat quality was high enough to meet the selection criteria. In contrast, the 2008 critical habitat identified lands in part based on status as LSRs. However, LSRs were not originally designed under the NWFP solely to meet the needs of the northern spotted owl, but may include areas designated for other late-successional forest species. Therefore, not all LSRs contain habitat of sufficient quality to be included in the critical habitat network for the northern spotted owl. Connected to the decision to designate lands in part because of their status as LSRs, we did not include NWFP matrix on Forest Service lands in 2008. In this designation we have included NWFP matrix lands where they contain high quality habitat essential to the species' conservation. As described in the section Changes from the Proposed Rule, we tested a habitat network that did not include many of these high-value matrix lands; doing so led to a significant increase in the risk of extinction for the species, therefore these lands are retained in this final designation.

Table 5 shows a comparison of areas included in the 2008 designation and those included in this revision to critical habitat. The process we used to determine occupied areas containing essential features and unoccupied areas essential to the conservation of the species is described in Criteria Used to Identify Critical Habitat.

TABLE 5—COMPARISON OF AREA INCLUDED IN 2008 CRITICAL HABITAT AND 2012 CRITICAL HABITAT BY REGION. THE 11 REGIONS ARE DESCRIBED IN DETAIL IN THE PROPOSED REVISED CRITICAL HABITAT DESIGNATION SECTION

Modeling region	2012 Critical habitat		2008 Final critical habitat	
	acres	hectares	acres	hectares
North Coast Olympics	824,500	333,663	485,039	196,289

TABLE 5—COMPARISON OF AREA INCLUDED IN 2008 CRITICAL HABITAT AND 2012 CRITICAL HABITAT BY REGION. THE 11 REGIONS ARE DESCRIBED IN DETAIL IN THE PROPOSED REVISED CRITICAL HABITAT DESIGNATION SECTION—Continued

Modeling region	2012 Critical habitat		2008 Final critical habitat	
	acres	hectares	acres	hectares
Oregon Coast	859,864	347,975	507,082	205,209
Redwood Coast	180,855	73,189	70,153	28,390
West Cascades North	542,274	219,450	390,232	157,921
West Cascades Central	909,687	368,136	546,333	221,093
West Cascades South	1,355,198	548,429	700,421	283,450
East Cascades North	1,345,523	544,514	687,702	278,303
East Cascades South	368,381	149,078	207,291	83,888
Klamath East	1,052,731	426,025	667,795	270,247
Klamath West	1,197,389	484,565	667,795	270,247
Inner California Coast Ranges	941,568	381,039	535,863	216,856
Grand total	9,577,969	3,876,064	5,312,327	2,149,823

The reduction in the number of critical habitat units from 33 in 2008 to 11 in 2012 is a reflection, in part, of our decision to aggregate habitat by regions. The 2008 designation included 33 critical habitat units; the 2012 revision includes 11 critical habitat units with 60 subunits.

Our determination of PCEs in this revised designation incorporates new information resulting from research conducted since the last revision in 2008. This new information, along with relevant older studies, allowed us to include a higher level of specificity in the PCEs in this revision. This final rule also includes two changes in overall organization. The 2008 revised designation considered nesting and roosting habitat as separate PCEs. In this designation, we have combined these habitat types, because northern spotted owls generally use the same habitat for both nesting and roosting; they are not separate habitat types, and function differs only based on whether a nest structure is present. At the scale of a rangewide designation of critical habitat, nesting and roosting habitats cannot be systematically distinguished, and, therefore, we combined them in our analysis and resulting rulemaking. For project planning and management of northern spotted owls at the local scale, the distinction between nesting and roosting habitat remains useful, especially in portions of the subspecies' range where nesting structures are conspicuous (e.g., mistletoe brooms). The second organizational change was to subdivide the range of the northern spotted owl into four separate regions, and to describe PCEs for foraging habitat separately for each of these to provide more appropriate region-specific information.

VI. Critical Habitat

Background

Critical habitat is defined in section 3 of the Act as:

(1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features;

(a) Essential to the conservation of the species; and

(b) Which may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the requirement that Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the consultation requirements of section 7(a)(2) of the Act would apply, but even in the event of a destruction or adverse modification finding, the obligation of the Federal action agency and the landowner is not to restore or recover the species, but to implement reasonable and prudent alternatives to avoid destruction or adverse modification of critical habitat.

Under the first prong of the Act's definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features: (1) Which are essential to the conservation of the species, and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific and commercial data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat). In identifying those physical or biological features within an area, we focus on the principal biological or physical constituent elements (PCEs—primary constituent elements such as roost sites, nesting grounds, rainfall, canopy cover, soil type) that are essential to the conservation of the species.

Under the second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. For example, an area that was not occupied at the time of listing but is essential to the conservation of the species may be included in the critical habitat designation. We designate critical habitat in areas outside the geographical area occupied by a species only when a designation limited to its range would be inadequate to ensure the conservation of the species (50 CFR 424.12(e)).

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific and commercial data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the **Federal Register** on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106–554; H.R. 5658)), and our associated Information Quality Guidelines, provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information developed during the listing process for the species. Additional information sources may include the recovery plan for the species, articles in peer-reviewed journals, conservation plans developed by States and counties, scientific status surveys and studies, biological assessments, other unpublished materials, or experts' opinions or personal knowledge.

Habitat is dynamic, and northern spotted owls may move from one area to another over time. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species. Areas that are important to the conservation of the species, both inside and outside the critical habitat designation, will continue to be subject to: (1) Conservation actions implemented under section 7(a)(1) of the Act, (2) regulatory protections afforded by the requirement in section 7(a)(2) of the Act for Federal agencies to insure their actions are not likely to jeopardize the continued existence of any endangered or threatened species, and (3) the prohibitions of section 9 of the Act on taking any individual of the species, including taking caused by actions that affect habitat. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. These protections and conservation tools will continue to contribute to recovery of this species. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans (HCPs), or other species conservation planning efforts if new information available at the time of these planning efforts calls for a different outcome.

Physical or Biological Features

In accordance with section 3(5)(A)(i) and 4(b)(1)(A) of the Act and regulations at 50 CFR 424.12, in determining which areas within the geographical area occupied by the species at the time of listing to designate as critical habitat, we consider the physical or biological features essential to the conservation of the species and which may require special management considerations or protection. These include, but are not limited to:

(1) Space for individual and population growth and for normal behavior;

(2) Food, water, air, light, minerals, or other nutritional or physiological requirements;

(3) Cover or shelter;

(4) Sites for breeding, reproduction, or rearing (or development) of offspring; and

(5) Habitats that are protected from disturbance or are representative of the historical, geographical, and ecological distributions of a species.

For the northern spotted owl, the physical or biological features essential to the conservation of the species are forested areas that are used or likely to be used for nesting, roosting, foraging, or dispersing. The specific characteristics or components that comprise these features include, for example, specific ranges of forest stand density and tree size distribution; coarse woody debris; and specific resources, such as food (prey and suitable prey habitat), nest sites, cover, and other physiological requirements of northern spotted owls and considered essential for the conservation of the species. Below, we describe the life-history needs of the species and the broader physical or biological features essential to the conservation of the northern spotted owl, which informed our identification of the primary constituent elements (PCEs). The following information is based on studies of the habitat, ecology, and life history of the species, as described in the final listing rule for the northern spotted owl, published in the **Federal Register** on June 26, 1990 (55 FR 26114); the Revised Recovery Plan for the Northern Spotted Owl released on June 30, 2011 (USFWS 2011); the Background section of this document; and the following information.

Although the northern spotted owl is typically considered a habitat and prey specialist, it uses a relatively broad array of forest types for nesting, roosting, foraging, and dispersal. The diversity of forest types used is a reflection of the large geographical range of this subspecies, and the strong gradation in annual precipitation and temperature associated with both coastal mountain ranges and the Cascade Range. While the northern spotted owl is unquestionably associated with old-growth forests, habitat selection and population performance involves many additional features (Loehle *et al.* 2011, p. 20). This description of physical or biological features summarizes both variation in habitat use and particular features or portions of the overall gradient of variation that northern spotted owls preferentially select, and that we, therefore, consider essential to their conservation. We begin by considering the broad-scale patterns of climate, elevation, topography, and forest community type that act to influence northern spotted owl distributions and space for population growth and dispersal. We then discuss the abundance and pattern of habitats used for nesting, roosting, and foraging at the landscape scale that influence the availability and occupancy of breeding sites and the survival and fecundity of northern spotted owls. Thus, we begin by considering factors that operate at broader spatial scales and proceed to factors that influence habitat quality at the forest stand scale. When we discuss the physical or biological features, we focus on features that are common range wide, but also summarize specific

features or patterns of habitat selection that characterize particular regions.

Physical Influences Related to Features Essential to the Northern Spotted Owl

Climate, elevation, and topography are features of the physical environment that influence the capacity of a landscape to support habitat with high value for northern spotted owls and the type of habitat needed by the species. The distribution and amount of habitat on the landscape reflects interactions among these physical elements. Several studies have found that physical aspects of the environment, such as topographic position, aspect, and elevation, influence the northern spotted owl's selection of habitat (e.g., Clark 2007, pp. 97–111; Stalberg *et al.* 2009, p. 80). These features are also factors in determining the type of habitats essential to northern spotted owl conservation.

Climate—Population processes for northern spotted owls are affected by both large-scale fluctuations in climate conditions and by local weather variation (Glenn 2009, pp. 246–248). The influence of weather and climate on northern spotted owl populations has been documented in northern California (Franklin *et al.* 2000, pp. 559–583), Oregon (Olson *et al.* 2004, pp. 1047–1052; Dugger *et al.* 2005, pp. 871–877; Glenn *et al.* 2010, pp. 2546–2551), and Washington (Glenn *et al.* 2010, pp. 2546–2551). Climate and weather effects on northern spotted owls are mediated by vegetation conditions, and the combination of climate and vegetation variables improves models designed to predict the distribution of northern spotted owls (e.g., Carroll 2010, pp. 1434–1437).

Climate niche models for the northern spotted owl identified winter precipitation as the most important climate variable influencing ability to predict the distribution of northern spotted owl habitat (Carroll 2010, p. 1434). This finding is consistent with previous demographic studies that suggest there are negative effects of winter and spring precipitation on survival, recruitment, and dispersal (Franklin *et al.* 2000; pp. 559–583). Niche modeling suggested that precipitation variables, both in winter and in summer, were more influential than winter and summer temperatures (Carroll 2010, p. 1434–1436).

Wet, cold weather during the winter or nesting season, particularly the early nesting season, has been shown to negatively affect northern spotted owl reproduction (Olson *et al.* 2004, p. 1039; Dugger *et al.* 2005, p. 863; Glenn *et al.* 2011b, p. 1279), survival (Franklin *et al.* 2000, p. 539; Olson *et al.* 2004, p. 1039; Glenn *et al.* 2011a, p. 159), and recruitment (Franklin *et al.* 2000, p. 559; Glenn *et al.* 2010, p. 2546). Cold, wet weather may reduce reproduction or survival during the breeding season, due to declines or decreased activity in small mammal populations, so that less food is available during this period when metabolic demands are high (Glenn *et al.* 2011b, pp. 1290–1294). Wet, cold springs or intense storms during this time may increase the risk of starvation in adult birds (Franklin *et al.* 2000, pp. 559–590). Cold, wet weather may also limit abundance of prey (Lehmkuhl *et al.* 2006, pp. 589–595), and reduce the male northern spotted owl's ability to bring food to incubating females or nestlings (Franklin *et al.* 2000, pp. 559–590). Cold, wet nesting seasons have been shown to increase the mortality of nestlings due to chilling (Franklin *et al.* 2000, pp. 559–590), and reduce the number of young fledged per pair per year (Franklin *et al.* 2000, p. 559, Olson *et al.* 2004, p. 1047; Glenn *et al.* 2011b, p. 1279). Wet, cold weather may decrease survival of dispersing juveniles during their first winter, thereby reducing recruitment (Franklin *et al.* 2000, pp. 559–590).

Habitat quality may offset the negative effects of climate extremes. Franklin *et al.* (2000, pp. 582–583) argued that northern spotted owl populations are regulated or limited by both habitat quality and environmental factors, such as weather. Abundance and availability of prey may ultimately limit northern spotted owl populations, and abundance of prey is strongly associated with habitat conditions. As habitat quality decreases, other factors, such as weather, have a stronger influence on demographic performance. In essence, the presence of high-quality habitat appears to buffer the negative effects of cold, wet springs and winters on survival of northern spotted owls, as well as ameliorate the effects of heat. High-quality northern spotted owl habitat was defined in a northern California study area as a mature or old-growth core within a mosaic of old and younger forest (Franklin *et al.* 2000, p. 559). The high-quality habitat can help maintain a stable prey base, thereby reducing the cost of foraging during the early breeding season, when energetic needs are high (Carey *et al.* 1992, pp. 223–250; Franklin *et al.* 2000, p. 559). In addition, mature and old forest with high canopy cover typically remains cooler during summer months than younger stands.

Drought or hot temperatures during the previous summer have also been associated with reduced northern spotted owl recruitment and survival (Glenn *et al.* 2010, p. 2546). Drier, warmer summers and drought conditions during the growing season strongly influence primary production in forests, food availability, and the population sizes of small mammals (Glenn *et al.* 2010, p. 2546). Northern flying squirrels (one of the northern spotted owl's primary prey), for example, forage primarily on ectomycorrhizal fungi (truffles), many of which grow better under moist conditions (Lehmkuhl *et al.* 2004, pp. 58–60). Drier, warmer summers, or the high-intensity fires, which such conditions support, may change the range or availability of these fungi, affecting northern flying squirrels and the northern spotted owls that prey on them. Periods of drought are associated with declines in annual survival rates for other raptors, due to a presumed decrease in prey availability (Glenn *et al.* 2010, pp. 2546–2551).

Mexican northern spotted owls (*Strix occidentalis lucida*) and California northern spotted owls (*S. o. occidentalis*) have a narrow temperature range in which body temperature can be maintained without additional metabolic energy expenditure (Ganey *et al.* 1993, pp. 653–654; Weathers *et al.* 2001, pp. 682–686). Others (e.g., Franklin *et al.* 2000, entire) have assumed the northern spotted owl to be similar in this regard. While winter temperatures are relatively mild across much of the northern spotted owl's range, heat stress has been identified as a potential stressor at temperatures exceeding 30 °C (86 °F; Weathers *et al.* 2001, p. 678). The northern spotted owl's selection for areas with older-forest characteristics has been hypothesized to be related, in part, to its needing cooler areas in summer to avoid heat stress (Barrows and Barrows 1978, entire).

Elevation and Topography—Elevation and corresponding changes in temperature or moisture regimes constrain the development of vegetation communities selected by northern spotted owls, and may exceed the bounds of physiological tolerance of northern spotted owls or their prey as well. Several studies have noted the avoidance or absence of northern spotted owls above location-specific elevational limits (Blakesley *et al.* 1992, pp. 390–391; Hershey *et al.* 1998, p. 1406; LaHaye and Gutiérrez 1999, pp. 326, 328). In some locations, elevational limits occur despite the presence of forests that appear to have the structural characteristics typically associated with northern spotted owl habitat. Where

forest structure is not the apparent cause of elevational limits, the mechanistic bases of these limits are unknown, but they could be related to prey availability, presence of competitors, or extremes of temperature or precipitation. Habitat for northern spotted owls can occur from sea level to the lower elevation limit of subalpine vegetation types. This upper elevation limit varies with latitude from about 3,000 feet (ft) (900 meters (m)) above sea level in coastal Washington and Oregon (Davis and Lint 2005, p. 32) to about 6,000 ft (1,800 m) above sea level near the southern edge of the range (derived from Davis and Lint 2005, p. 32).

Topography also influences the distribution of northern spotted owl habitat and patterns of habitat selection. The effects of topography are strongest in drier forests, where aspect and insolation (amount of solar radiation received in an area) contribute to moisture stress that can limit forest density and tree growth. In drier forests east of the Cascades and in the Klamath region, suitable habitat can be concentrated at intermediate topographic positions, on north-facing aspects, and in concave landforms that retain moisture. This leads to a distribution of suitable habitat characterized by ribbon-like bands and discrete patches. Ribbons occur along drainages and valley bottoms, along the north faces of ridges that trend from east to west, and at intermediate topographic positions between drier pine-dominated forests at lower elevations, and subalpine forest types at higher elevations. Discrete patches also occur on top of higher plateaus. Northern spotted owl populations inhabiting drier forests have higher fecundity and lower survival rates than owls in other regions (Hicks *et al.* 2003, pp. 61–62; Anthony *et al.* 2006, pp. 28, 30). The naturally fragmented distribution of suitable habitat in drier forests, and increased predation risk associated with traversing this landscape, may be one of many features that contributed to the evolution of these life-history characteristics.

Slope may also influence the distribution of suitable habitat. Intermediate slopes have been associated with northern spotted owl sites in some studies (e.g., Gremel 2005, p. 37; Gaines *et al.* 2010, pp. 2048–2050; USFWS 2011, Appendix C), but the mechanisms underlying this association are unclear, potentially including a variety of features from soil depth to competition with barred owls.

Disturbance Regimes—Natural disturbances and anthropogenic (human-caused) activities continuously shape the amount and distribution of northern spotted owl habitat on the landscape. In moist forests west of the Cascades in Washington and Oregon, and in the Redwood region in California, anthropogenic activities have a dominant influence on distribution patterns of remaining habitat, with natural disturbances typically playing a secondary role. In contrast, drier forests east of the Cascades and in the Klamath region have dynamic disturbance regimes that continue to exert a strong influence on northern spotted owl habitat. Climate change may modify disturbance regimes across the range of the northern spotted owl, resulting in substantial changes to the frequency and extent of habitat disruption by natural events.

In drier forests, low- and mixed-severity fires historically contributed to a high level of spatial and temporal variability in landscape patterns of disturbed and recovering vegetation. However, anthropogenic activities have so altered these historical patterns and composition of vegetation, fuels, and associated disturbance regimes, that contemporary landscapes no longer function as they did historically (Hessburg *et al.* 2000a, pp. 77–78; Hessburg and Agee 2003, pp. 44–51; Hessburg *et al.* 2005, pp. 122–127, 134–136; Skinner *et al.* 2006, pp. 176–179; Skinner and Taylor 2006, pp. 201–203).

Fire exclusion, combined with the removal of fire-tolerant structures (e.g., large, fire-tolerant tree species such as ponderosa pine, western larch (*Larix occidentalis*), and Douglas-fir), have reduced the resiliency of the landscape to fire and other disturbances, (Agee 1993, pp. 280–319; Hessburg *et al.* 2000a, pp. 71–80; Hessburg and Agee 2003, pp. 44–46). Understory vegetation in these forests has shifted in response to fire exclusion from grasses and shrubs to shade-tolerant conifers, reducing fire tolerance of these forests, and increasing drought stress on dominant tree species.

Anthropogenic activities have also fundamentally changed the spatial distribution of fire-intolerant stands among the fire-tolerant stands, changing the pattern of fire activity across the landscape. Past management has altered the natural disturbance regime, homogenized the formerly patchy vegetative network, and reduced the complexity that was more prevalent during the presettlement era (Skinner 1995, pp. 224–226; Hessburg and Agee 2003, pp. 44–45; Hessburg *et al.* 2007, p. 21; Kennedy and Wimberly 2009, pp. 564–565). This alteration in the disturbance regime further affects forest structure and composition. Patches of fire-intolerant vegetation that had been spatially separated have become more contiguous and are more prone to conducting fire, insects, and diseases across larger swaths of the landscape (Hessburg *et al.* 2005, pp. 71–74, 77–78). This homogenized landscape may be altering the size and intensity of current disturbances and further altering landscape functionality (e.g., Everett *et al.* 2000, pp. 221–222).

The intensity and spatial extent of natural disturbances that affect the amount, distribution, and quality of northern spotted owl habitat in dry forests are also influenced by local topographic features, elevation, and climate (Swanson *et al.* 1988, entire). At local scales, these factors can be used to identify areas that are insulated from recent or existing disturbance, and consequently tend to persist without disturbance for longer periods (Camp *et al.* 1997, entire). These disturbance refugia are locations where northern spotted owl habitat has a higher likelihood of developing and persisting in drier forests. As a result of these unevenly distributed disturbance regimes, especially in the drier forests within its range, habitat for the northern spotted owl naturally occurs in a patchy mosaic in various stages of suitability in these regions. Sufficient area to provide for these habitat dynamics and to allow for the maintenance of adequate quantities of suitable habitat on the landscape at any one point in time is, therefore, essential to the conservation of the northern spotted owl in the dry forest regions.

Pattern and Distribution of Habitat—Historically, forest types occupied by the northern spotted owl were fairly continuous, particularly in the wetter parts of its range in coastal northern California and most of western Oregon and Washington. Suitable forest types in the drier parts of the range (interior northern California, Klamath region, interior southern Oregon, and east of the Cascade crest in Oregon and Washington) occur in a mosaic pattern interspersed with infrequently used vegetation types, such as open forests, shrubby areas, and grasslands. As described above, natural disturbance processes in these drier regions likely contributed to a pattern in which patches of habitat in various stages of suitability shift positions on the landscape through time. In the Klamath Mountains Provinces of Oregon and California, and to a lesser extent in the Coast and Cascade Provinces of California, large areas of serpentine soils exist that are typically not capable of supporting northern spotted owl habitat (Davis and Lint 2005, pp. 31–33).

Biological Influences Related to Features Essential to the Northern Spotted Owl

Forest Community Type (Composition)—Across their geographical range, northern spotted owl use of habitat spans several scales, with increasing levels of habitat selection specificity at each scale. We refer to these scales as the ''landscape,'' ''home range,'' and ''core area'' scales. Nest stands within core areas are even more narrowly selected (see Functional Categories of Northern Spotted Owl Habitat, in the Background section, above).

Landscapes supporting populations of northern spotted owls are the broadest scale we considered, encompassing areas sufficient to support numerous reproductive pairs (roughly 20,000 to 200,000 ac (8,100 to 81,000 ha). At the landscape scale, the northern spotted owl inhabits most of the major types of coniferous forests across its geographical range, including Sitka spruce, western hemlock, mixed conifer and mixed evergreen, grand fir, Pacific silver fir, Douglas-fir, redwood/Douglas-fir (in coastal California and southwestern Oregon), white fir, Shasta red fir, and the moist end of the ponderosa pine zone (Forsman *et al.* 1984, pp. 8–9; Franklin and Dyrness 1988, entire; Thomas *et al.* 1990, p. 145). These forest types may be in early-, mid-, or late-seral stages, and must occur in concert with at least one of the physical or biological features characteristic of breeding and nonbreeding (dispersal) habitat, described below.

Landscape-level patterns in tree species composition and topography can influence the distribution and density of northern spotted owls. These differences in northern spotted owl distribution occur even when different forest types have similar structural attributes, suggesting that northern spotted owls may prefer specific plant associations or tree species. Some forest types, such as pine-dominated and subalpine forests, are infrequently used, regardless of their structural attributes. In areas east of the Cascade Crest, northern spotted owls select forests with high proportions of Douglas-fir trees. The effects of tree species composition on habitat selection also extend to hardwoods within conifer-dominated forests (e.g., Meyer *et al.* 1998, p. 35). For example, our habitat modeling indicated that habitat value in the central Western Cascades was negatively related to proportion of hardwoods present. At the home range and core area scales, locations occupied by northern spotted owls consistently have greater amounts of mature and old-growth forest compared to random locations or unused areas. The proportion of older or structurally complex forest within the home range varies greatly by geographical region, but typically falls between 30 and 78 percent (Courtney *et al.* 2004, p. 5–6). In studies where circles of different sizes were compared, differences between northern spotted owl sites and random locations diminished as circles of increasing size were evaluated (Courtney *et al.* 2004, p. 5–7), suggesting habitat selection is stronger at the core area scale than at the home range and landscape scales.

Population Spatial Requirements—We have described a range of climatic, elevational, topographic, and compositional factors, and associated disturbance dynamics typical of different regions, that constrain the amount and distribution of northern spotted owl habitat across landscapes. Within this context, areas that contain the physical or biological features described below must provide habitat in an amount and distribution sufficient to support persistent populations, including metapopulations of reproductive pairs, and opportunities for nonbreeding and dispersing owls to move among populations to be considered essential to the conservation of the northern spotted owl.

Northern spotted owls maintain large home ranges that vary in size across nearly an order of magnitude across the species' range, from about 1,400 to 14,000 ac (570 to 5,700 ha), depending on geographic latitude and prey resources (see *Home Range Requirements,* below). Overlap occurs among adjoining territories, but the large size of territories nonetheless means that populations of northern spotted owls require landscapes with large areas of habitat suitable for nesting, roosting, and foraging. For example, in the northern parts of the subspecies' range where territories are largest, a population of 20 resident pairs would require at least 100,000 ac (about 40,500 ha) of habitat that is relatively densely distributed and of high quality.

As described in the Background section above, several studies have examined patterns of northern spotted owl habitat selection at the territory scale and the consequences on fitness of habitat configuration within a territory. We do not know if the features that contribute to enhancing northern spotted owl occupancy and reproductive success at the territory scale can be scaled up to predict what landscape-scale patterns of habitat are most conducive to stable or increasing northern spotted owl populations. Studies that use populations as units of analysis in order to investigate the effects of the landscape-scale configuration of habitat on the performance of northern spotted owl populations have only begun recently. Past models of northern spotted owl population dynamics have included predictions about the effects of habitat configuration on population performance, but these predictions have not been tested or validated by empirical studies (Franklin and Gutiérrez 2002; p. 215). Recent demographic analyses suggested that recruitment was positively related to the proportion of study areas covered by suitable habitat (see Forsman *et al.* 2011, pp. 59–62), but this covariate was not associated with other aspects of demographic performance, and few other covariates were investigated.

When the northern spotted owl was listed as threatened in 1990 (55 FR 26114; June 26, 1990), habitat loss and fragmentation of old-growth forest were identified as major factors contributing to declines in northern spotted owl populations. As older forests were reduced to smaller and more isolated patches, the ability of northern spotted owls to successfully disperse and establish territories was likely reduced (Lamberson *et al.* 1992, pp. 506, 508, 510–511). Lamberson *et al.* (1992, pp. 509–511) identified an apparent sharp threshold in the amount of habitat below which northern spotted owl population viability plummeted. Lamberson *et al.* (1994, pp. 185–186, 192–194) concluded that size, spacing, and shape of reserved areas all had strong influence on population persistence, and reserves that could support a minimum of 20 northern spotted owl territories were more likely to maintain northern spotted owl populations than smaller reserves. They also found that juvenile dispersal was facilitated in areas large enough to support at least 20 northern spotted owl territories.

In addition to area size, spacing between reserves had a strong influence on successful dispersal (Lamberson *et al.* 1992, pp. 508, 510–511). Forsman *et al.* (2002, pp. 15–16) reported dispersal distances of 1,475 northern spotted owls in Oregon and Washington for 1985 to 1996. Median maximum dispersal distance (the straight-line distance between the natal site and the farthest location) for radio-marked juvenile male northern spotted owls was 12.7 miles (mi) (20.3 kilometers (km)), and that of female northern spotted owls was 17.2 mi (27.5 km) (Forsman *et al.* 2002: Table

2). Dispersal data and other studies on the amount and configuration of habitat necessary to sustain northern spotted owls provided the foundation for developing previous northern spotted owl habitat reserve systems. Given the range-wide declining trends in northern spotted owl populations, as well as declining trends in the recruitment of new individuals into territorial populations (Forsman *et al.* 2011, pp. 59–66, Table 22), we have determined that, to be essential, physical or biological features must be positioned on the landscape to enable populations to persist and to allow individual owls to disperse among populations.

In contrast to earlier designations of critical habitat, we did not develop an *a priori* rule set to identify those areas that provide the physical or biological features essential to the conservation of the owl, using factors such as minimum size of habitat blocks, targeted numbers of owl pairs, or maximum distance between blocks of habitat. Instead, we determined the spatial extent and placement of the areas providing the physical or biological features that are essential to the conservation of the owl based on the relative demographic performance of the habitat models tested. This process is summarized in the section Criteria Used to Identify Critical Habitat, presented later in this document, and is presented in detail in our supporting documentation (Dunk *et al.* 2012b, entire). This supporting documentation, which describes in detail the modeling process we used, is available at our Web site. We refer to this document in the Summary of Comments and Recommendations section, below, as our ''Modeling Supplement'' (Dunk *et al.* 2012b).

Home Range Requirements—Most adult northern spotted owls remain on their home range throughout the year; therefore, their home range must provide all the habitat components, including prey, needed for the survival and successful reproduction of a territorial pair. The home range of a northern spotted owl is relatively large, but varies in size across the range of the subspecies (Courtney *et al.* 2004, p. 5–24; 55 FR 26117; June 26, 1990). Home range sizes are largest in Washington (Olympic Peninsula: 9,231 ac (3,736 ha) (Forsman *et al.* 2005, pp. 371–372), and generally decrease along a north-south gradient to approximately 1,430 ac (580 ha) in the Klamath region of northwestern California and southern Oregon (Zabel *et al.* 1995, p. 436). Northern spotted owl home ranges are generally larger where northern flying squirrels are the predominant prey and smaller where woodrats are the predominant prey (Zabel *et al.* 1995, p. 436). Home range size also increases with increasing forest fragmentation (Carey *et al.* 1992, p. 235; Franklin and Gutiérrez 2002, p. 212; Glenn *et al.* 2004, p. 45) and decreasing proportions of nesting habitat on the landscape (Carey *et al.* 1992, p. 235; Forsman *et al.* 2005, p. 374), suggesting that northern spotted owls increase the size of their home ranges to encompass adequate amounts of suitable forest types (Forsman *et al.* 2005, p. 374).

Meta-analysis of features associated with occupancy at the territory-scale indicated that northern spotted owls consistently occupy areas having larger patches of older forests that were more numerous and closer together than random sites (Franklin and Gutiérrez 2002; p. 212). In the Klamath and Redwood regions owls also consistently occupy sites with higher forest heterogeneity than random sites. Occupied sites in the Klamath region, in particular, show a high degree of vegetative heterogeneity, with more variable patch sizes and more perimeter edge than in other regions (Franklin and Gutiérrez 2002; p. 212). In the Klamath region, ecotones, or edges between older forests and other seral stages, may contribute to improved access to prey (Franklin and Gutiérrez 2002, p. 215). Several studies in the Klamath region and the Redwood region have found that variables describing the relationship between habitat core area and edge length improve the ability of models to predict northern spotted owl occupancy (e.g., Folliard *et al.* 2000, pp. 79–81; Zabel *et al* 2003, pp. 1936–1938). In contrast, northern spotted owl sites in the Oregon Coast Range had a more even distribution of cover types than random locations, and nest stands had a higher ratio of core to edge and more complex stand shapes than non-nest stands (Courtney *et al.* 2004, p. 5–9).

A home range provides the habitat components essential for the survival and successful reproduction of a resident breeding pair of northern spotted owls. The exact amount, quality, and configuration of these habitat types required for survival and successful reproduction varies according to local conditions and factors, such as the degree of habitat fragmentation, proportion of available nesting habitat, and primary prey species (Courtney *et al.* 2004, p. 5–2).

Core Area Requirements—Northern spotted owls often use habitat within their home ranges disproportionally, and exhibit central-place foraging behavior (Rosenberg and McKelvey 1999, p. 1028), with much activity centered within a core area surrounding the nest tree during the breeding season. During fall and winter, as well as in nonbreeding years, owls often roost and forage in areas of their home range more distant from the core. The size of core areas varies considerably across the subspecies' geographical range following a pattern similar to that of home range size (Bingham and Noon 1997, p. 133), varying from over 4,057 ac (1,642 ha) in the northernmost (flying squirrel prey) provinces (Forsman *et al.* 2005, pp. 370, 375) to less than 500 ac (202 ha) in the southernmost (dusky-footed woodrat prey) provinces (Pious 1995, pp. 9–10, Table 2; Zabel *et al.* 2003, pp. 1036–1038). Owls often switch nest trees and use multiple core areas over time, possibly in response to local prey depletion or loss of a particular nest tree.

Core areas contain greater proportions of mature or old forest than random or nonuse areas (Courtney *et al.* 2004, p. 5–13), and the amount of high-quality habitat at the core area scale shows the strongest relationships with occupancy (Meyer *et al.* 1998, p. 34; Zabel *et al.* 2003, pp. 1027, 1036), survival (Franklin *et al.* 2000, p. 567; Dugger *et al.* 2005, p. 873), and reproductive success (Ripple *et al.* 1997, pp. 155 to 156; Dugger *et al.* 2005, p. 871). In some areas, edges between forest types within northern spotted owl home ranges may provide increased prey abundance and availability (Franklin *et al.* 2000, p. 579). For successful reproduction, core areas need to contain one or more forest stands that have both the structural attributes and the location relative to other features in the home range that allow them to fulfill essential nesting, roosting, and foraging functions (Carey and Peeler 1995, pp. 233–236; Rosenberg and McKelvey 1999, pp. 1035–1037).

Areas to Support Dispersal and Nonbreeding Owls—Northern spotted owls regularly disperse through highly fragmented forested landscapes that are typical of the mountain ranges in western Washington and Oregon, and have dispersed from the Coastal Mountains to the Cascades Mountains in the broad forested regions between the Willamette, Umpqua, and Rogue Valleys of Oregon (Forsman *et al.* 2002, p. 22). Corridors of forest through fragmented landscapes serve primarily to support relatively rapid movement through such areas, rather than colonization or residency of nonbreeding owls.

During the transience (movement) phase, dispersers used mature and old-growth forest slightly more than its availability; during the colonization phase, mature and old-growth forest was

used at nearly twice its availability (Miller *et al.* 1997, p. 144). Closed pole-sapling-sawtimber habitat was used roughly in proportion to availability in both phases and may represent the minimum condition for movement. Open sapling and clearcuts were used less than expected based on availability during colonization (Miller *et al.* 1997, p. 145). In comparison, nondispersing subadults or nonbreeding adults that are residents require habitats that are more similar to the nesting, roosting, and foraging habitats utilized by breeding pairs. This suggests that juveniles and transient dispersers either have a less developed ability to avoid areas where starvation or predation are more likely, or they can use a greater variety of forested habitats than nondispersing adults, or both.

We currently do not have sufficient information to permit formal modeling of dispersal habitat and the influence of dispersal habitat condition on dispersal success (USFWS 2011, p. C–15). We expect, based on the studies discussed above, that dispersal success is highest when dispersers move through forests that have the characteristics of nesting-roosting and foraging habitats. Northern spotted owls can also disperse successfully through forests with less complex structure, but risk of starvation and predation likely increase with increasing divergence from the characteristics of suitable (nesting, roosting, foraging) habitat. The suitability of habitat to contribute to successful dispersal of northern spotted owls is likely related to the degree to which it ameliorates heat stress, provides abundant and accessible prey, limits predation risk, and resembles habitat in natal territories (Carey 1985, pp. 105–107; Buchanan 2004, pp. 1335–1341).

Dispersal habitat is habitat that both juvenile and adult northern spotted owls must use when looking to establish a new territory. Although optimal dispersal habitat would be the same as suitable nesting, roosting, or foraging habitat (mature and old-growth stands), dispersing owls will use younger forest for dispersal, and the Interagency Scientific Committee (Thomas *et al.* 1990) suggested the 50–11–40 rule for maintaining baseline forest conditions between blocks of old forest to enhance dispersal. Forests composed of at least 50 percent of trees with 11 inches (in) (28 centimeters (cm)) diameter at breast height (dbh) or greater, and with roughly a minimum 40 percent canopy cover, were considered to meet this baseline condition for northern spotted owl dispersal. Dispersal habitat can occur between larger blocks of nesting, foraging, and roosting habitat or within blocks of nesting, roosting, and foraging habitat. Dispersal habitat is essential to maintaining stable populations by promoting rapid filling of territorial vacancies when resident northern spotted owls die or leave their territories, and to providing adequate gene flow across the range of the species.

Regional Variation in Habitat Use—Differences in patterns of habitat associations across the range of the northern spotted owl suggest four different broad zones of habitat use, which we characterize as the (1) West Cascades/Coast Ranges of Oregon and Washington, (2) East Cascades, (3) Klamath and Northern California Interior Coast Ranges, and (4) Redwood Coast (Figure 1. We configured these zones based on a qualitative assessment of similarity among ecological conditions and habitat associations within the 11 different regions analyzed, as these 4 zones efficiently capture the range in variation of some of the physical or biological features essential to the conservation of the northern spotted owl. We summarize the physical or biological features for each of these four zones, emphasizing zone-specific features that are distinctive within the context of general patterns that apply across the entire range of the northern spotted owl.

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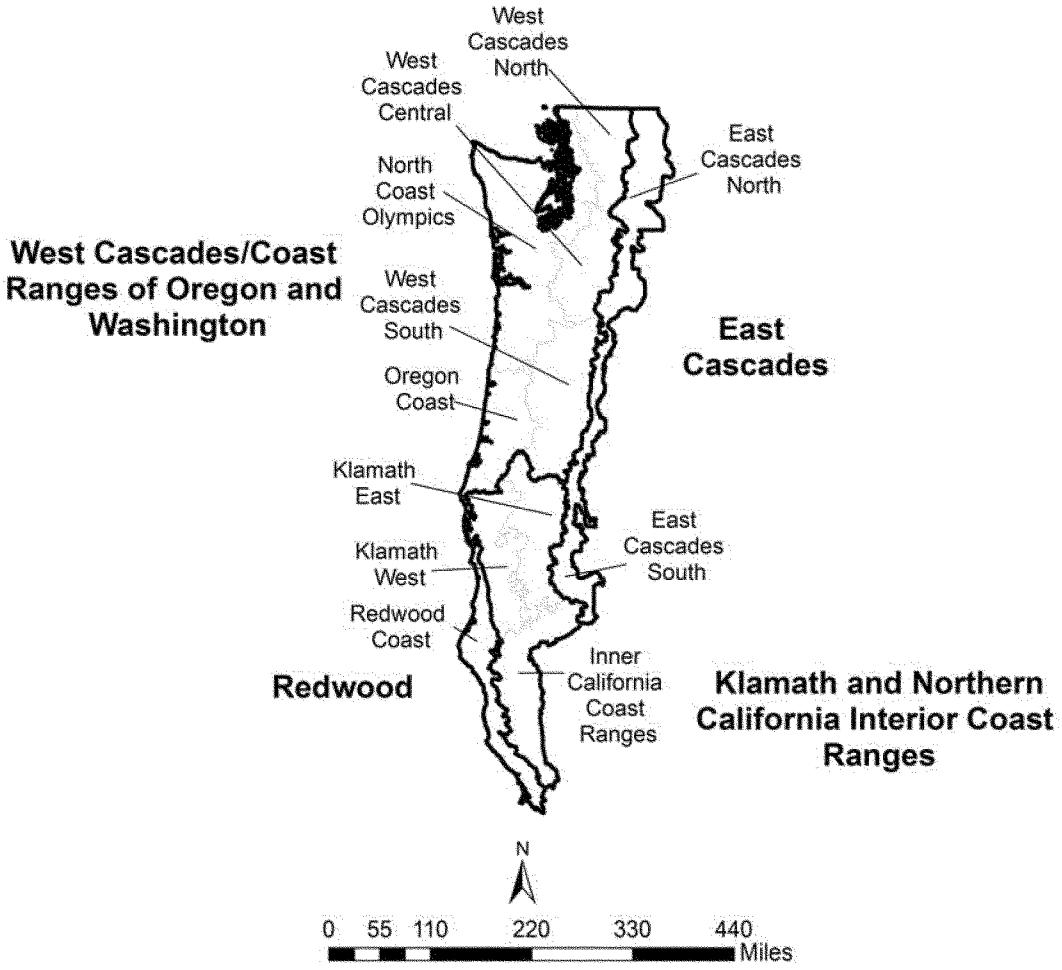
Figure 1. Eleven regions and four zones of habitat associations of northern spotted owls in Washington, Oregon, and California.



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West Cascades/Coast Ranges of Oregon and Washington

This zone includes five regions west of the Cascade crest in Washington and Oregon (Western Cascades North, Central and South; North Coast Ranges and Olympic Peninsula; and Oregon Coast Ranges; USFWS 2011, p. C–13). Climate in this zone is characterized by high rainfall and cool to moderate temperatures. Variation in elevation between valley bottoms and ridges is relatively low in the Coast Ranges, creating conditions favorable for development of contiguous forests. In contrast, the Olympic and Cascade ranges have greater topographic variation with many high-elevation areas supporting permanent snowfields and glaciers. Douglas-fir and western hemlock dominate forests used by northern spotted owls in this zone. Root diseases and wind-throw are important natural disturbance mechanisms that form gaps in forested areas. Flying squirrels are the dominant prey, with voles and mice also representing important items in the northern spotted owl's diet.

Our habitat modeling indicated that vegetation structure had a dominant influence on owl population performance, with habitat pattern and topography also contributing. High canopy cover, high density of large trees, high numbers of subcanopy vegetation layers, and low to moderate slope positions were all important features.

Nesting habitat in this zone is mostly limited to areas with large trees with defects such as mistletoe brooms, cavities, or broken tops. The subset of foraging habitat that is not nesting/roosting habitat generally had slightly lower values than nesting habitat for canopy cover, tree size and density, and canopy layering. Prey species (primarily northern flying squirrel) in this zone are associated with mature to late-successional forests, resulting in small differences between nesting, roosting, and foraging habitat.

East Cascades

This zone includes the Eastern Cascades North and Eastern Cascades South regions (USFWS 2011, p. C–13). This zone is characterized by a continental climate (cold, snowy winters and dry summers) and a high frequency of natural disturbances due to fires and outbreaks of forest insects and pathogens. Flying squirrels are the dominant prey species, but the diet of northern spotted owls in this zone also includes relatively large proportions of bushy-tailed woodrats, snowshoe hare, pika, and mice (Forsman *et al.* 2001, pp. 144–145).

Our modeling indicates that habitat associations in this zone do not show a pattern of dominant influence by one or a few variables (USFWS 2011, Appendix C). Instead, habitat association models for this zone

included a large number of variables, each making a relatively modest contribution (20 percent or less) to the predictive ability of the model. The features that were most useful in predicting habitat quality were vegetation structure and composition, and topography, especially slope position in the north. Other efforts to model habitat associations in this zone have yielded similar results (e.g., Gaines *et al.* 2010, pp. 2048–2050; Loehle *et al.* 2011, pp. 25–28).

Relative to other portions of the subspecies' range, nesting and roosting habitat in this zone includes relatively younger and smaller trees, likely reflecting the common usage of dwarf mistletoe brooms (dense growths) as nesting platforms (especially in the north). Forest composition that includes high proportions of Douglas-fir is also associated with this nesting structure. Additional foraging habitat in this zone generally resembles nesting and roosting habitat, with reduced canopy cover and tree size, and reduced canopy layering. High prey diversity suggests relatively diverse foraging habitats are used. Topographic position was an important variable, particularly in the north, possibly reflecting competition from barred owls (Singleton *et al.* 2010, pp. 289, 292). Barred owls, which have been present for over 30 years in northern portions of this zone, preferentially occupy valley-bottom habitats, possibly compelling northern spotted owls to establish territories on less productive, mid-slope locations (Singleton *et al.* 2010, pp. 289, 292).

Klamath and Northern California Interior Coast Ranges

This zone includes the Klamath West, Klamath East, and Interior California Coast regions (USFWS 2011, p. C–13). This region in southwestern Oregon and northwestern California is characterized by very high climatic and vegetative diversity resulting from steep gradients of elevation, dissected topography, and large differences in moisture from west to east. Summer temperatures are high, and northern spotted owls occur at elevations up to 5,800 ft (1,768 m). Western portions of this zone support a diverse mix of mesic forest communities interspersed with drier forest types. Forests of mixed conifers and evergreen hardwoods are typical of the zone. Eastern portions of this zone have a Mediterranean climate with increased occurrence of ponderosa pine. Douglas-fir dwarf mistletoe (*Arceuthobium douglasii*) is rarely used for nesting platforms in the western part of the northern spotted owl's range, but is commonly used in the east. The prey base for northern spotted owls in this zone is correspondingly diverse, but dominated by dusky-footed woodrats, bushy-tailed woodrats, and flying squirrels. Northern spotted owls have been well studied in the western Klamath portion of this zone (Forsman *et al.* 2004, p. 217), but relatively little is known about northern spotted owl habitat use in the eastern portion and the California Interior Coast Range portion of the zone. Our habitat association models for this zone suggest that vegetation structure and topographic features are nearly equally important in influencing owl population performance, particularly in the Klamath. High canopy cover, high levels of canopy layering, and the presence of very large dominant trees were all important features of nesting and roosting habitat. Compared to other zones, additional foraging habitat for this zone showed greater divergence from nesting habitat, with much lower canopy cover and tree size. Low to intermediate slope positions were strongly favored. In the eastern Klamath, presence of Douglas-fir was an important compositional variable in our habitat model (USFWS 2011, Appendix C).

Redwood Coast

This zone is confined to the northern California coast, and is represented by the Redwood Coast region (USFWS 2011, p. C–13). It is characterized by a maritime climate with moderate temperatures and generally mesic conditions. Near the coast, frequent fog delivers consistent moisture during the summer. Terrain is typically low-lying (0 to 3,000 ft (0 to 900 m)). Forest communities are dominated by redwood, Douglas-fir–tanoak (*Lithocarpus densiflorus*) forest, coast live oak (*Quercus agrifolia*), and tanoak series. Dusky footed woodrats are the dominant prey items for northern spotted owls in this zone.

Habitat association models for this zone diverged strongly from models for other zones. Topographic variables (slope position and curvature) had a dominant influence with vegetation structure having a secondary role. Low position on slopes was strongly favored, along with concave landforms.

Several studies of northern spotted owl habitat relationships suggest that stump-sprouting and rapid growth of redwood trees, combined with high availability of woodrats in patchy, intensively managed forests, enables northern spotted owls to occupy a wide range of vegetation conditions within the redwood zone. Rapid growth rates enable young stands to develop structural characteristics typical of older stands in other regions. Thus, relatively small patches of large remnant trees can also provide nesting habitat structure in this zone.

Physical or Biological Features and Primary Constituent Elements

Under the Act and its implementing regulations, we are required to identify the physical or biological features essential to the conservation of the northern spotted owl in areas occupied at the time of listing, focusing on the features' primary constituent elements. Primary constituent elements are those specific elements of the physical or biological features that provide for a species' life-history processes and are essential to the conservation of the species. The physical or biological features essential to the conservation of the northern spotted owl are forested lands that can be used for nesting, roosting, foraging, or dispersing. We have further determined that these physical or biological features may require special management considerations or protection, as described in the section *Special Management Considerations or Protection,* below. For the northern spotted owl, the primary constituent elements are the specific characteristics that make areas suitable for nesting, roosting, foraging and dispersal habitat. To be essential to the conservation of the northern spotted owl, these features need to be distributed in a spatial configuration that is conducive to persistence of populations, survival and reproductive success of resident pairs, and survival of dispersing individuals until they can recruit into a breeding population.

Models developed for the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011, Appendix C) to assess habitat suitability for the northern spotted owl across the range of the species and applied here to help identify potential critical habitat were based on habitat conditions within 500-acre (200-ha) core areas. Because core areas support a mix of nesting, roosting, and foraging habitats, their characteristics provide a basis for identification and quantification of PCEs.

Physical or Biological Features by Life-History Function

Each of the essential features—in this case, forested lands that provide the functional categories of northern spotted owl habitat—comprises a complex interplay of structural elements, such as tree size and species, stand density, canopy diversity, and decadence.

Northern spotted owls have been shown to exhibit strong associations with specific PCEs; however, the range of combinations of PCEs that may constitute habitat (particularly foraging habitat) is broad. In addition, the relative importance of specific habitat elements (and subsequently their relevance as PCEs) is strongly influenced by physical factors, such as elevation and slope position, and the degree to which physical factors influence the role of individual PCEs varies geographically. In addition to forest type, the key elements of habitats with the physical or biological features essential for the conservation of the northern spotted owl may be organized as follows:

Nesting and Roosting Habitat

Nesting and roosting habitat provides structural features for nesting, protection from adverse weather conditions, and cover to reduce predation risks for adults and young. Because nesting habitat provides resources critical for nest site selection and breeding, its characteristics tend to be conservative; stand structures at nest sites tend to vary little across the northern spotted owl's range. Nesting stands typically include a moderate to high canopy cover (60 to over 80 percent); a multilayered, multispecies canopy with large (greater than 30 in (76 cm) dbh) overstory trees; a high incidence of large trees with various deformities (e.g., large cavities, broken tops, mistletoe infections, and other evidence of decadence); large snags; large accumulations of fallen trees and other woody debris on the ground; and sufficient open space below the canopy for northern spotted owls to fly (Thomas *et al.* 1990, p. 164; 57 FR 1798, January 15, 1992). These findings were recently reinforced in rangewide models developed by Davis and Dugger (2011, Table 3–1, p. 39), who found that stands used for nesting (moderate to high suitability) exhibited high canopy cover of conifers (65 to 89 percent), large trees (mean diameter from 20 to 36 in (51 to 91 cm)), with a forest density of 6 to 19 large trees (greater than 30 in dbh) per acre (15 to 47 large trees (greater than 76 cm dbh) per hectare), and high diameter diversity.

Recent studies have found that northern spotted owl nest stands tend to have greater tree basal area, number of canopy layers, density of broken-top trees, number or basal area of snags, and volume of logs (Courtney *et al.* 2004, pp. 5–16 to 5–19, 5–23) than non-nest stands. In some forest types, northern spotted owls nest in younger forest stands that contain structural characteristics of older forests (legacy features from previous stands before disturbance). In the portions of the northern spotted owl's range where Douglas-fir dwarf mistletoe occurs, infected trees provide an important source of nesting platforms (Buchanan *et al.* 1993, pp. 4–5). Nesting northern spotted owls consistently occupy stands having a high degree of canopy cover that may provide thermoregulatory benefits (Weathers *et al.* 2001, p. 686), allowing northern spotted owls a wider range of choices for locating thermally neutral roosts near the nest site. A high degree of canopy cover may also conceal northern spotted owls, reducing potential predation. Studies of roosting locations found that northern spotted owls tended to use stands with greater vertical canopy layering (Mills *et al.* 1993, pp. 318–319), canopy cover (King 1993, p. 45), snag diameter (Mills *et al.* 1993, pp. 318–319), diameter of large trees (Herter *et al.* 2002, pp. 437, 441), and amounts of large woody debris (Chow 2001, p. 24; reviewed in Courtney *et al.* 2004, pp. 5–14 to 5–16, 5–23). Northern spotted owls use the same habitat for both nesting and roosting; the characteristics of roosting habitat differ from those of nesting habitat only in that roosting habitat need not contain the specific structural features used for nesting (Thomas *et al.* 1990, p. 62). Aside from the presence of the nest structure, nesting and roosting habitat are generally inseparable.

Habitat modeling developed for the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011, Appendix C) and used as one means of helping us identify potential critical habitat for the northern spotted owl supports previous descriptions of nesting habitat (57 FR 1796, January 15, 1992; 73 FR 47326, August 13, 2008), and suggests a high degree of similarity among the 11 ecological regions across the range of the species. Across regions, moderate to high suitability nesting habitat was characterized as having high canopy cover (65 to over 80 percent) and high basal area (240 ft^2/ac; (55 m^2/ha), mean dbh of conifers at least 16.5 to 24 in (42 to 60 cm), and a significant component of larger trees (greater than 30 in (75 cm)).

Foraging Habitat

Habitats used for foraging by northern spotted owls vary widely across the northern spotted owl's range, in accordance with ecological conditions and disturbance regimes that influence vegetation structure and prey species distributions. In general, northern spotted owls select old forests for foraging in greater proportion than their availability at the landscape scale (Carey *et al.* 1992, pp. 236–237; Carey and Peeler 1995, p. 235; Forsman *et al.* 2005, pp. 372–373), but will forage in younger stands and brushy openings with high prey densities and access to prey (Carey *et al.* 1992, p. 247; Rosenberg and Anthony 1992, p. 165; Thome *et al.* 1999, pp. 56–57; Irwin *et al.* 2012, pp. 208–210). Throughout much of the owl's range, the same habitat that provides for nesting and roosting also provides for foraging, although northern spotted owls have greater flexibility in utilizing a variety of habitats for foraging than they do for nesting and roosting. That is, habitats that meet the species' needs for nesting and roosting generally also provide for foraging (and dispersal) requirements of the owl. However, in some areas owls may use other types of habitats for foraging, in addition to those used for nesting and roosting; thus, habitat that supports foraging (or dispersal) does not always support the other PCEs, and does not necessarily provide for nesting or roosting. Variation in the potential use of various foraging habitats throughout the range of the northern spotted owl is described here.

West Cascades/Coast Ranges of Oregon and Washington

In the West Cascades/Coast Ranges of Oregon and Washington, high-quality foraging habitat is also nesting/roosting habitat. Foraging activity is positively associated with tree height diversity (North *et al.* 1999, p. 524), canopy cover (Irwin *et al.* 2000, p. 180; Courtney *et al.* 2004, p. 5–15), snag volume, density of snags greater than 20 in (50 cm) dbh (North *et al.* 1999, p. 524; Irwin *et al.* 2000, pp. 179–180; Courtney *et al.* 2004, p. 5–15), density of trees greater than or equal to 31 in (80 cm) dbh (North *et al.* 1999, p. 524) density of trees 20 to 31 in (51 to 80 cm) dbh (Irwin *et al.* 2000, pp. 179–180), and volume of woody debris (Irwin *et al.* 2000, pp. 179–180).

While the majority of studies reported strong associations with old-forest characteristics, younger forests with some structural characteristics (legacy features) of old forests (Carey *et al.* 1992, pp. 245 to 247; Irwin *et al.* 2000, pp. 178 to 179), hardwood forest patches, and edges between old forest and hardwoods (Glenn *et al.* 2004, pp. 47–48) are also used by foraging northern spotted owls.

East Cascades

Foraging habitats used by northern spotted owls in the East Cascades of Oregon, Washington, and California were similar to those used in the Western Cascades, but can also encompass forest stands that exhibit

somewhat lower mean tree sizes (quadratic mean diameter 16 to 22 in (40 to 55 cm) (Irwin *et al.* 2012, p. 207). However, foraging activity was still positively associated with densities of large trees (greater than 26 in (66 cm)) and increasing basal area (Irwin *et al.* 2012, p. 206). Stands dominated by Douglas-fir and white fir/Douglas-fir, or grand fir/Douglas-fir were preferred in some regions, whereas stands dominated by ponderosa pine were generally avoided (Irwin *et al.* 2012, p. 207).

Klamath and Northern California Interior Coast Ranges

Because diets of northern spotted owls in the Klamath and Northern California Interior Coast Ranges consist predominantly of both northern flying squirrels and dusky-footed woodrats, habitats used for foraging northern spotted owls are much more variable than in northern portions of the species' range. As in other regions, foraging northern spotted owls select stands with mature and old-forest characteristics such as increasing mean stand diameter and densities of trees greater than 26 in (66 cm) dbh (Irwin *et al.* 2012, p. 206) and a dominant canopy of large conifer trees greater than 21 in (52.5 cm) dbh (Solis and Gutierrez 1990, p. 747), high canopy cover (87 percent at frequently used sites; Solis and Gutierrez 1990, p. 747, Table 3), and multiple canopy layers (Solis and Gutierrez 1990, pp. 744–747; Anthony and Wagner 1999, pp. 14, 17). However, other habitat elements are disproportionately used, particularly forest patches within riparian zones of low-order streams (Solis and Gutierrez 1990, p. 747; Irwin *et al.* 2012, p. 208) and edges between conifer and hardwood forest stands (Zabel *et al.* 1995, pp. 436–437; Ward *et al.* 1998, pp. 86, 88–89). Foraging use is positively influenced by conifer species, including incense-cedar (*Calocedrus decurrens*), sugar pine (*P. lambertiana*), Douglas-fir, and hardwoods such as bigleaf maple (*Acer macrophyllum*), California black oak (*Q. kelloggii*), live oaks, and Pacific madrone (*Arbutus menziesii*) as well as shrubs (Sisco 1990, p. 20; Irwin *et al.* 2012, pp. 206–207, 209–210), presumably because they produce mast important for prey species. Within a mosaic of mature and older forest habitat, brushy openings and dense young stands or low-density forest patches also receive some use (Sisco 1990, pp. 9, 12, 14, 16; Zabel *et al.* 1993, p. 19; Irwin *et al.* 2012, pp. 209–210).

Redwood Coast

The preponderance of information regarding habitats used for foraging by northern spotted owls in the Redwood Coast zone comes from intensively managed industrial forests. In these environments, which comprise the majority of the redwood region, interspersion of foraging habitat and prey-producing habitat appears to be an important element of habitat suitability. Foraging habitat is used by owls to access prey and is characterized by a wide range of tree sizes and ages. Foraging activity by owls is positively associated with density of small to medium sized trees (10 to 22 in (25 to 56 cm)) and trees greater than 26 in (66 cm) in diameter (Irwin *et al.* 2007b, p. 19) or greater than 41 years of age (MacDonald *et al.* 2006, p. 381). Foraging was also positively associated with hardwood species, particularly tanoak (MacDonald *et al.* 2006, pp. 380–382; Irwin *et al.* 2007a, pp. 1188–1189). Prey-producing habitats occur within early-seral habitats 6 to 20 years old (Hamm and Diller 2009, p. 100, Table 2), typically resulting from clearcuts or other intensive harvest methods. Habitat elements within these openings include dense shrub and hardwood cover, and woody debris.

Nonbreeding and Dispersal Habitat

Although the term ''dispersal'' frequently refers to post-fledgling movements of juveniles, for the purposes of this rule we are using the term to include all movement during both the transience and colonization phase, and to encompass important concepts of linkage and connectivity among owl subpopulations. Population growth can only occur if there is adequate habitat in an appropriate configuration to allow for the dispersal of owls across the landscape. Although habitat that allows for dispersal may currently be marginal or unsuitable for nesting, roosting, or foraging, it provides an important linkage function among blocks of nesting habitat both locally and over the owl's range that is essential to its conservation. However, as noted above, we expect dispersal success is highest when dispersers move through forests that have the characteristics of nesting-roosting and foraging habitats. Although northern spotted owls may be able to move through forests with less complex structure, survivorship is likely decreased. Dispersal habitat, at a minimum, consists of stands with adequate tree size and canopy cover to provide protection from avian predators and at least minimal foraging opportunities; there may be variations over the owl's range (e.g., drier site in the east Cascades or northern California). This may include younger and less diverse forest stands than foraging habitat, such as even-aged, pole-sized stands, but such stands should contain some roosting structures and foraging habitat to allow for temporary resting and feeding during the transience phase.

Habitat supporting nonbreeding northern spotted owls, or the colonization phase of dispersal, is generally equivalent to nesting, roosting, and foraging habitat and is described above, although it may be in smaller amounts than that needed to support nesting pairs.

Primary Constituent Elements for the Northern Spotted Owl

Based on our current knowledge of the physical or biological features and habitat characteristics required to sustain the species' life-history processes, we determine that the primary constituent elements specific to the northern spotted owl are as follows; note that PCE 1 must occur in concert with PCE 2, 3, or 4:

(1) Forest types that may be in early-, mid-, or late-seral stages and that support the northern spotted owl across its geographical range; these forest types are primarily:

(a) Sitka spruce,

(b) Western hemlock,

(c) Mixed conifer and mixed evergreen,

(d) Grand fir,

(e) Pacific silver fir,

(f) Douglas-fir,

(g) White fir,

(h) Shasta red fir,

(i) Redwood/Douglas-fir (in coastal California and southwestern Oregon), and

(j) The moist end of the ponderosa pine coniferous forests zones at elevations up to approximately 3,000 ft (900 m) near the northern edge of the range and up to approximately 6,000 ft (1,800 m) at the southern edge.

(2) Habitat that provides for nesting and roosting. In many cases the same habitat also provides for foraging (PCE (3)). Nesting and roosting habitat provides structural features for nesting, protection from adverse weather conditions, and cover to reduce predation risks for adults and young. This PCE is found throughout the geographical range of the northern spotted owl, because stand structures at nest sites tend to vary little across the northern spotted owl's range. These habitats must provide:

(a) Sufficient foraging habitat to meet the home range needs of territorial pairs

of northern spotted owls throughout the year.

(b) Stands for nesting and roosting that are generally characterized by:

(i) Moderate to high canopy cover (60 to over 80 percent);

(ii) Multilayered, multispecies canopies with large (20–30 in (51–76 cm) or greater dbh) overstory trees;

(iii) High basal area (greater than 240 ft^2/ac (55 m^2/ha));

(iv) High diversity of different diameters of trees;

(v) High incidence of large live trees with various deformities (e.g., large cavities, broken tops, mistletoe infections, and other evidence of decadence);

(vi) Large snags and large accumulations of fallen trees and other woody debris on the ground; and

(vii) Sufficient open space below the canopy for northern spotted owls to fly.

(3) Habitat that provides for foraging, which varies widely across the northern spotted owl's range, in accordance with ecological conditions and disturbance regimes that influence vegetation structure and prey species distributions. Across most of the owl's range, nesting and roosting habitat is also foraging habitat, but in some regions northern spotted owls may additionally use other habitat types for foraging as well. The foraging habitat PCEs for the four ecological zones within the geographical range of the northern spotted owl are generally the following:

(a) West Cascades/Coast Ranges of Oregon and Washington

(i) Stands of nesting and roosting habitat; additionally, owls may use younger forests with some structural characteristics (legacy features) of old forests, hardwood forest patches, and edges between old forest and hardwoods;

(ii) Moderate to high canopy cover (60 to over 80 percent);

(iii) A diversity of tree diameters and heights;

(iv) Increasing density of trees greater than or equal to 31 in (80 cm) dbh increases foraging habitat quality (especially above 12 trees per ac (30 trees per ha));

(v) Increasing density of trees 20 to 31 in (51 to 80 cm) dbh increases foraging habitat quality (especially above 24 trees per ac (60 trees per ha));

(vi) Increasing snag basal area, snag volume (the product of snag diameter, height, estimated top diameter, and including a taper function (North *et al.* 1999, p. 523)), and density of snags greater than 20 in (50 cm) dbh all contribute to increasing foraging habitat quality, especially above 4 snags per ac (10 snags per ha);

(vii) Large accumulations of fallen trees and other woody debris on the ground; and

(viii) Sufficient open space below the canopy for northern spotted owls to fly.

(b) East Cascades

(i) Stands of nesting and roosting habitat;

(ii) Stands composed of Douglas-fir and white fir/Douglas-fir mix;

(iii) Mean tree size greater than 16.5 in (42 cm) quadratic mean diameter;

(iv) Increasing density of large trees (greater than 26 in (66 cm)) and increasing basal area (the total area covered by trees measured at breast height) increases foraging habitat quality;

(v) Large accumulations of fallen trees and other woody debris on the ground; and

(vi) Sufficient open space below the canopy for northern spotted owls to fly.

(c) Klamath and Northern California Interior Coast Ranges

(i) Stands of nesting and roosting habitat; in addition, other forest types with mature and old-forest characteristics;

(ii) Presence of the conifer species, incense-cedar, sugar pine, Douglas-fir, and hardwood species such as bigleaf maple, black oak, live oaks, and madrone, as well as shrubs;

(iii) Forest patches within riparian zones of low-order streams and edges between conifer and hardwood forest stands;

(iv) Brushy openings and dense young stands or low-density forest patches within a mosaic of mature and older forest habitat;

(v) High canopy cover (87 percent at frequently used sites);

(vi) Multiple canopy layers;

(vii) Mean stand diameter greater than 21 in (52.5 cm);

(viii) Increasing mean stand diameter and densities of trees greater than 26 in (66 cm) increases foraging habitat quality;

(ix) Large accumulations of fallen trees and other woody debris on the ground; and

(x) Sufficient open space below the canopy for northern spotted owls to fly.

(d) Redwood Coast

(i) Nesting and roosting habitat; in addition, stands composed of hardwood tree species, particularly tanoak;

(ii) Early-seral habitats 6 to 20 years old with dense shrub and hardwood cover and abundant woody debris; these habitats produce prey, and must occur in conjunction with nesting, roosting, or foraging habitat;

(iii) Increasing density of small-to-medium sized trees (10 to 22 in (25 to 56 cm)) increases foraging habitat quality;

(iv) Trees greater than 26 in (66 cm) in diameter or greater than 41 years of age; and

(v) Sufficient open space below the canopy for northern spotted owls to fly.

(4) Habitat to support the transience and colonization phases of dispersal, which in all cases would optimally be composed of nesting, roosting, or foraging habitat (PCEs (2) or (3)), but which may also be composed of other forest types that occur between larger blocks of nesting, roosting, and foraging habitat. In cases where nesting, roosting, or foraging habitats are insufficient to provide for dispersing or nonbreeding owls, the specific dispersal habitat PCEs for the northern spotted owl may be provided by the following:

(a) Habitat supporting the transience phase of dispersal, which includes:

(i) Stands with adequate tree size and canopy cover to provide protection from avian predators and minimal foraging opportunities; in general this may include, but is not limited to, trees with at least 11 in (28 cm) dbh and a minimum 40 percent canopy cover; and

(ii) Younger and less diverse forest stands than foraging habitat, such as even-aged, pole-sized stands, if such stands contain some roosting structures and foraging habitat to allow for temporary resting and feeding during the transience phase.

(b) Habitat supporting the colonization phase of dispersal, which is generally equivalent to nesting, roosting, and foraging habitat as described in PCEs (2) and (3), but may be smaller in area than that needed to support nesting pairs.

This revised designation describes the physical or biological features and their primary constituent elements essential to support the life-history functions of the northern spotted owl. We have determined that all of the units and subunits designated in this rule were occupied by the northern spotted owl at the time of listing, and that (depending on the scale at which occupancy is considered) some smaller areas within the subunits may have been unoccupied at the time of listing. To address any uncertainty regarding occupancy, we have also evaluated all of the areas identified here as critical habitat under the standard of section 3(5)(a)(ii) of the Act, and determined that they are essential to the conservation of the species, as described in Criteria Used to Identify Critical Habitat, below. The criteria section also describes our evaluation of the configuration of the

physical or biological features on the landscape to determine where those features are essential to the conservation of the northern spotted owl. We have further determined that the physical or biological features essential to the conservation of the northern spotted owl require special management considerations or protection, as described below.

In areas occupied at the time of listing, not all of the revised critical habitat will contain all of the PCEs, because not all life-history functions require all of the PCEs. Some subunits contain all PCEs and support multiple life processes, while some subunits may contain only those PCEs necessary to support the species' particular use of that habitat. However, all of the areas occupied at the time of listing and designated as critical habitat support at least the first PCE described (forest-type), in conjunction with at least one other PCE. Thus PCE (1) must always occur in concert with at least one additional PCE (PCE 2, 3, or 4).

Special Management Considerations or Protection

When designating critical habitat, we assess whether the specific areas within the geographical area occupied by the species at the time of listing contain features that are essential to the conservation of the species and which may require special management considerations or protection. The term critical habitat is defined in section 3(5)(A) of the Act, in part, as the specific areas within the geographical areas occupied by the species, at the time it is listed, on which are found those physical or biological features essential to the conservation of the species and ''which may require special management considerations or protection.'' Accordingly, in identifying critical habitat in areas occupied at the time of listing, we determine whether the features essential to the conservation of the species on those areas may require any special management actions or protection. Here we present a discussion of the special management considerations or protections that may be required throughout the critical habitat for the northern spotted owl. In addition, for the benefit of land managers, we provide management suggestions consistent with the recommendations of the Revised Recovery Plan for consideration.

An effective critical habitat strategy needs to conserve extant, high-quality northern spotted owl habitat in order to reverse declining population trends and address the threat from barred owls. The northern spotted owl was initially listed as a threatened species due largely to both historical and ongoing habitat loss and degradation. The recovery of the northern spotted owl therefore requires both protection of habitat and management where necessary to provide sufficient high-quality habitat to allow for population growth and to provide a buffer against threats such as competition with the barred owl. Recovery Criterion 3 in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) is the ''Continued Maintenance and Recruitment of Northern Spotted Owl Habitat,'' which is further described as the achievement of a stable or increasing trend in northern spotted owl nesting, roosting, and foraging habitat throughout the range of the species. Meeting this recovery criterion will require special management considerations or protection of the physical or biological features essential to the conservation of the northern spotted owl in all of the critical habitat units and subunits, as described here. Special management includes both passive and active management.

The 2011 Revised Recovery Plan for the Northern Spotted Owl describes the three main threats to the northern spotted owl as competition from barred owls, past habitat loss, and current habitat loss (USFWS 2011, p. III–42). As the barred owl is present throughout the range of the northern spotted owl, special management considerations or protections may be required in all of the critical habitat units and subunits to ensure the northern spotted owl has sufficient habitat available to withstand competitive pressure from the barred owl (Dugger *et al.* 2011, pp. 2459, 2467). In particular, studies by Dugger *et al.* (2011, p. 2459) and Wiens (2012, entire) indicated that northern spotted owl demographic performance is better when additional high-quality habitat is available in areas where barred owls are present.

Scientific peer reviewers of the 2011 Revised Recovery Plan for the Northern Spotted Owl (USFSW 2011, entire) and Forsman *et al.* (2011, p. 77) recommended that we address currently observed downward demographic trends in northern spotted owl populations by protecting currently occupied sites, as well as historically occupied sites, and by maintaining and restoring older and more structurally complex multilayered conifer forests on all lands (USFWS 2011, pp. III–42 to III–43). The types of management or protections that may be required to achieve these goals and maintain the physical or biological features essential to the conservation of the owl in occupied areas vary across the range of the species. Some areas of northern spotted owl habitat, particularly in wetter forest types, are unlikely to be enhanced by active management activities, but instead need protection of the essential features; whereas other forest areas would likely benefit from more proactive forestry management. For example, in drier, more fire-prone regions of the owl's range, habitat conditions will likely be more dynamic, and more active management may be required to reduce the risk to the essential physical or biological features from fire, insects, disease, and climate change, as well as to promote regeneration following disturbance.

While we recommend conservation of high-quality and occupied northern spotted owl habitat, long-term northern spotted owl recovery could benefit from forest management where the basic goals are to restore or maintain ecological processes and resilience, as discussed in detail in the Revised Recovery Plan (USFWS 2011, pp. III–11 to III–39). Special management considerations or protections may be required throughout the critical habitat to achieve these goals and benefit the conservation of the owl. The natural ecological processes and landscape that once provided large areas of relatively contiguous northern spotted owl habitat (especially on the west side of the Cascade Range) have been altered by a history of anthropogenic activities, such as timber harvest, road construction, development, agricultural conversion, and fire suppression. The resilience of these systems is now additionally challenged by the effects of climate change. As recommended in the Revised Recovery Plan for the Northern Spotted Owl, active forest management may be required throughout the range of the owl with the goal of maintaining or restoring forest ecosystem structure, composition, and processes so they are sustainable and resilient under current and future climate conditions, to provide for the long-term conservation of the species (USFWS 2011, p. III–13). For example, in some areas, past management practices have decreased age-class diversity and altered the structure of forest patches; in these areas, management, such as targeted vegetation treatments, could simultaneously reduce fuel loads and increase canopy and age-class diversity (Miller *et al.* 2009, p. 30; Stephens *et al.* 2009, p. 316–318; Stephens *et al.* 2012b, p. 554; Fontaine and Kennedy 2012, p. 1559; Chmura *et al.* 2011, p. 1134; USFWS 2011, p. III–18).

In moist forests that are currently providing mature and late-successional

forest that functions as habitat for northern spotted owls, active management is generally unnecessary to conserve older growth forests (Johnson and Franklin 2009, p. 3). Within younger, homogeneous stands, active management that retains larger and older trees but reduces density of smaller trees may be useful to accelerate development of within-stand structural diversity. Management insights, such as those provided by Aubry *et al.* (2009, entire), Johnson and Franklin (2009, entire), Johnson and Franklin (2012 entire), Kerr 2012, entire), and Spies *et al.* (2010, entire), provide examples of how such actions could occur in a manner consistent with northern spotted owl conservation in moist forests.

In dry forest regions, where natural disturbance regimes and vegetation structure, composition, and distribution have been substantially altered since Euro-American settlement, vegetation and fuels management (through influencing fire behavior, severity, and distribution) may be required to retain and recruit northern spotted owl habitat on the landscape (Buchanan 2009, pp. 114–115; Healey *et al.* 2008, pp. 1117–1118; Roloff *et al.* 2012, pp. 8–9; Ager *et al.* 2007, pp. 53–55; Ager *et al.* 2012, pp. 279–282; Franklin *et al.* 2009, p. 46; Kennedy and Wimberly 2009, pp. 564–565), to conserve other biodiversity (Perry *et al.* 2011, p. 715), and to restore more natural vegetation and disturbance regimes and heterogeneity (e.g., Stephens *et al.* 2012b, pp. 557–558). Special management considerations may be required to maintain adequate northern spotted owl habitat in the near term, not only to allow northern spotted owls to persist in the face of threats from barred owl expansion and habitat modifications from fire and other disturbances, but also to restore landscapes to a more resilient state in the face of alterations projected to occur with ongoing climate change (USFWS 2011, p. III–32).

If land managers are actively managing forests, we recommend that these activities be focused on lower quality owl habitat (lower relative habitat sustainability (RHS)); that these activities focus on ecological restoration, or apply principles of ecological forestry; and, where possible, evaluate the effects of these treatments on northern spotted owls and other species of concern using an active adaptive forest management framework.

We recognize that the only regulatory effect of the designation of critical habitat is that section 7(a)(2) of the Act applies, and that it does not require active management or mandate any specific type of management; it only requires that Federal agencies ensure that their actions are not likely to destroy or adversely modify critical habitat, as those terms are used in section 7. However, because the Act requires us to make a determination that the physical and biological features essential to conservation of the species may also need special management considerations or protection, we are taking this opportunity to describe, for consideration by land managers, specific management approaches and types of forest where land managers should consider applying them in order to maintain sufficient suitable habitat across the range of the owl. We have determined that the physical and biological features in habitat occupied by the species at the time it was listed, as represented by the primary constituent elements, may require special management considerations or protection as required by 16 U.S.C. 1532(5)(A). However, nothing in this rule requires land managers to implement, or precludes land managers from implementing, special management or protection measures.

Because these will vary geographically, here we provide a more detailed discussion of the types of management considerations or protections that may be required to preserve or enhance the essential physical or biological features for the northern spotted owl in the West Cascades/Coast Ranges of Oregon and Washington, East Cascades, Klamath and Northern California Interior Coast Ranges, and the Redwood Coast.

West Cascades/Coast Ranges of Oregon and Washington

Special management considerations or protection may be required in areas of moist forests to conserve or protect older stands that contain the conditions to support northern spotted owl occupancy (RA10: USFWS 2011, p. 43) or contain high-value northern spotted owl habitat (RA32: USFWS 2011, p. 67). Silvicultural treatments are generally not needed to maintain existing old-growth forests and high-quality habitat on moist sites (Wimberly *et al.* 2004, p. 155; Johnson and Franklin 2009, pp. 3, 39). In contrast to dry forests, short-term fire risk is generally lower in the moist forests that not only dominate on the west side of the Cascade Range, but also occur east of the Cascades as a higher-elevation band or as peninsulas or inclusions in mesic forests. Disturbance-based management for forests and northern spotted owls in moist forest areas should be different from that applied in dry forests. Efforts to alter either fuel loading or potential fire behavior in these sites could have undesirable ecological consequences as well (Johnson and Franklin 2009, p. 39; Mitchell *et al.* 2009, pp. 653–654; USFWS 2011, p. III–17). Furthermore, commercial thinning has been shown to have negative consequences for northern spotted owls (Forsman *et al.* 1984, Meiman *et al.* 2003) and their prey (Waters *et al.* 1994, Luoma *et al.* 2003, Wilson 2010). Active management may be more appropriate in younger plantations that are not currently on a trajectory to develop old-growth structure. These stands typically do not provide high-quality northern spotted owl habitat, although they may occasionally be used for foraging and dispersal.

In general, to advance long-term northern spotted owl recovery and ecosystem restoration in moist forests in the face of climate change and past management practices, special management considerations or protections may be required that follow these principles as recommended in the 2011 Revised Recovery Plan (USFWS 2011, p. III–18):

(1) Conserve older stands that contain the conditions to support northern spotted owl occupancy or high-value northern spotted owl habitat as described in Recovery Actions 10 and 32 (USFWS 2011, pp. III–43, III–67). On Federal lands this recommendation applies to all land-use allocations (see also Thomas *et al.* 2006, pp. 284–285).

(2) Management emphasis needs to be placed on meeting northern spotted owl recovery goals and long-term ecosystem restoration and conservation. When there is a conflict between these goals, actions that would disturb or remove the essential physical or biological features of northern spotted owl critical habitat need to be minimized and reconciled with long-term ecosystem restoration goals.

(3) Continue to manage for large, continuous blocks of late-successional forest.

(4) In areas that are not currently late-seral forest or high-value habitat and where more traditional forest management might be conducted (e.g. matrix), these activities should consider applying ecological forestry prescriptions. Some examples that could be utilized include Franklin *et al.* (2002, pp. 417–421; 2007, entire), Kerr (2012), Drever *et al.* (2006, entire), Johnson and Franklin (2009, pp. 39–41), Swanson *et al.* (2010, entire), and others cited in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011, pp. III–14, III–17 to III–19).

These special management considerations or protections apply to Units 1, 2, 4, 5 and 6 of the revised critical habitat.

East Cascades

Special management considerations or protection may be required in the East Cascades to address the effects of past activities associated with Euro-American settlement, such as timber harvest, livestock grazing, fire suppression, and fire exclusion, that have substantially altered the inland northwest, modifying the patterns of vegetation and fuels, and subsequent disturbance regimes to the degree that contemporary landscapes no longer function as they did historically (Hessburg *et al.* 2000a, pp. 74–81; Hessburg and Agee 2003, pp. 44–46; Hessburg *et al.* 2005, pp. 134–135; Skinner *et al.* 2006, pp. 178–179; Skinner and Taylor 2006, pp. 201–203; Miller *et al.* 2009, p. 30; Stephens *et al.* 2009, pp. 316–318; Stephens *et al.* 2012b, p. 554; Fontaine and Kennedy 2012, p. 1559; Chmura *et al.* 2011, p. 1134). This has affected not only the existing forest and disturbance regimes, but the quality, amount, and distribution of northern spotted owl habitat on the landscape (Buchanan 2009, pp. 114–115; Healey *et al.* 2008, pp. 1117–1118; Roloff *et al.* 2012, pp. 8–9; Ager *et al.* 2007, pp. 53–55; Ager *et al.* 2012, pp. 279–282; Franklin *et al.* 2009, p. 46; Kennedy and Wimberly 2009, pp. 564–565). In order to preserve the essential physical or biological features, these dynamic, disturbance-prone forests should be managed in a way that promotes northern spotted owl conservation, responds to climate change, and restores dry forest ecological structure, composition and processes, including wildfire and other disturbances (USFWS 2011, p. III–20). The following restoration principles apply to the management that may be required in this dry forest region (USFWS 2011, pp. III–34 to III–35):

(1) Conserve older stands that contain the conditions to support northern spotted owl occupancy or high-value northern spotted owl habitat as described in Recovery Actions 10 and 32 (USFWS 2011, pp. III–43, III–67). On Federal lands this recommendation applies to all land-use allocations (see also Thomas *et al.* 2006, pp. 284–285).

(2) Emphasize vegetation management treatments outside of northern spotted owl territories or highly suitable habitat;

(3) Design and implement restoration treatments at the landscape level;

(4) Retain and restore key structural components, including large and old trees, large snags, and downed logs;

(5) Retain and restore heterogeneity within stands;

(6) Retain and restore heterogeneity among stands;

(7) Manage roads to address fire risk; and

(8) Consider vegetation management objectives when managing wildfires, where appropriate.

The above principles will result in treatments that have a variety of effects on northern spotted owl habitat in the short and long term. For example, some restoration treatments may have an immediate neutral or beneficial effect on existing northern spotted owl habitat (e.g., roads management, some prescribed fire prescriptions). Other treatments, however, may involve reductions in stand densities, canopy cover, or ladder fuels (understory vegetation that has the potential to carry up into a crown fire)—and thus affect the physical or biological features needed by the species. At the stand scale, this can result in a level of conflict between conserving existing northern spotted owl habitat and restoring dry-forest ecosystems. Resolution of such conflicts can be enhanced by considering the range of forest conditions that comprise suitable owl habitat and tailoring management accordingly.

Land managers should change from the practice of implementing many small, uncoordinated and independent fuel-reduction and restoration treatments. Instead, coordinated and strategic efforts that link individual projects to the larger objectives of restoring landscapes while conserving and recovering northern spotted owl habitat are needed (sensu Sisk *et al.* 2005, entire; Prather *et al.* 2008, entire; Gaines *et al.* 2010, entire). Some examples of this type of planning in the east Cascades that may be emulated or referenced include the Okanagon-Wenatchee National Forest (USDA 2010, entire), The Nature Conservancy (Davis *et al.* 2012, entire), and the Deschutes National Forest (Smith *et al.* 2011, entire).

The special management considerations or protections identified here apply to Units 7 and 8 of the revised critical habitat.

Klamath and Northern California Interior Coast Ranges

The special management considerations or protections that may be required in the Klamath and Northern California Interior Coast Ranges represent a mix of the requirements needed to maintain or enhance the essential physical or biological features in mesic and dry forest types. This region in southwestern Oregon and northwestern California is characterized by very high climatic and vegetative diversity resulting from steep gradients of elevation, dissected topography, and large differences in moisture from west to east. Summer temperatures are high, and northern spotted owls occur at elevations up to 1,768 m (5,800 ft). Western portions of this zone support a diverse mix of mesic forest communities interspersed with drier forest types. Forests of mixed conifers and evergreen hardwoods are typical of the zone. Eastern portions of this zone have a Mediterranean climate with increased occurrence of ponderosa pine. Douglas-fir dwarf mistletoe is rarely used for nesting platforms in the west, but commonly used in the east. The prey base for northern spotted owls in this zone is correspondingly diverse, but is dominated by dusky-footed woodrats, bushy-tailed woodrats, and flying squirrels. Northern spotted owls have been well studied in the western portion of this zone (Forsman *et al.* 2005, p. 219), but relatively little is known about northern spotted owl habitat use in the eastern portion and the California Interior Coast Range portion of the zone.

High canopy cover, high levels of canopy layering, and the presence of very large dominant trees were all important features of nesting and roosting habitat. Compared to other zones, models of foraging habitat for this zone showed greater divergence from nesting habitat. Low to intermediate slope positions were strongly favored. In the eastern Klamath, presence of Douglas-fir was an important compositional variable. Habitat associations in the Klamath zone are diverse and unique, reflecting the climate, topography, and vegetation of this area. Nesting and roosting habitat somewhat resembles that of other zones, with a greater emphasis on topography that provides some relief from high temperatures while foraging habitat in this zone includes more open forests. Consequently, management actions consistent with maintaining and developing northern spotted owl habitat need to consider local conditions. In some areas, appropriate management will be more consistent with dry forest management strategies, while in other areas wet forest management strategies will be more appropriate.

This region contains habitat characteristics of both moist and dry forests interspersed across a highly diverse landscape (Halofsky *et al.* 2011, p. 1). The special management recommendations from the moist and dry forest sections, above, apply to the

management actions or protections that may be required in the Klamath and Northern California Interior Coast Ranges. Similar to the discussion in moist forests concerning conservation of small patches of early-seral habitat, Perry *et al.* (2011, p. 715) noted that replacement of early successional shrub-hardwood communities by closed forests in the absence of fire significantly impacts landscape diversity. Restoration of appropriate fire regimes and use of targeted silvicultural intervention may be effective where the goal is to restore or maintain this diversity (Halofsky *et al.* 2011, p. 15). An example of this type of planning in this area that may be emulated or referenced is the Ashland Forest Resiliency Project (USDA 2009, entire).

The special management considerations or protections identified here apply to Units 9, 10, and 11 of the revised critical habitat.

Redwood Coast

Special management considerations or protection may be needed in the Redwood Coast Zone to maintain or enhance the essential physical or biological features for the owl. Although the Redwood Coast zone of coastal northern California is considered part of the wet/moist forest region within the range of the northern spotted owl, there are distinct differences in northern spotted owl habitat use and diet within this zone. The long growing season in this region, combined with redwood's ability to resprout from stumps, allows redwood stands to attain suitable stand structure for nesting in a relatively short period of time (40–60 years) if legacy structures are present. Late-successional forest is an important component of nesting and roosting habitat in the Redwood Zone, and demographic productivity on northern spotted owl breeding sites has been positively correlated with the density of legacy trees in proximity to owl nest sites (Thome *et al.* 1999, p. 57). Forest management in this region should conserve older stands that contain the conditions to support northern spotted owl occupancy or high-value northern spotted owl habitat as described in Recovery Actions 10 and 32 (USFWS 2011, pp. III–43, III–67). On Federal lands this recommendation applies to all land-use allocations (see also Thomas *et al.* 2006, pp. 284–285). In this region, some degree of fine-scale fragmentation in redwood forests appears to benefit northern spotted owls. Forest openings aged 5 to 20 years (e.g., harvest units or burns), with dense shrub and hardwood cover, and abundant food sources, can provide high-quality habitat for the northern spotted owl's primary prey, the dusky-footed woodrat. Woodrat populations within recent openings probably peak by about stand age 10. Food sources and understory cover decline steadily through about stand age 20, when the woodrat population-source diminishes. In northern spotted owl territories within the Redwood Zone, active management that creates small openings in proximity to nesting, roosting, or foraging habitat may enhance northern spotted owl foraging opportunities.

The special management considerations or protections identified here apply to Unit 3 of the revised critical habitat.

Summary of Special Management Considerations or Protection

We find that each of the areas occupied at the time of listing that we are designating as critical habitat contains features essential to the conservation of the species that may require special management considerations or protection to ensure the conservation of the northern spotted owl. These special management considerations or protection may be required to preserve and enhance the essential features needed to achieve the conservation of the northern spotted owl. Additional information on management activities compatible with northern spotted owl conservation can be found within the Section 7 Consultation section of this preamble.

VII. Criteria Used To Identify Critical Habitat

As required by section 4(b)(1)(A) of the Act, we use the best scientific and commercial data available to designate critical habitat. We have reviewed the available information pertaining to the habitat requirements of the species. In accordance with the Act and its implementing regulations at 50 CFR 424.12(e), based on this review, we have identified the specific areas within the geographical area occupied by the species at the time it was listed on which are found those physical or biological features essential to the conservation of the species, and which may require special management considerations or protection. In addition, we considered whether any additional areas outside those occupied at the time of listing are essential for the conservation of the species.

Occupied Areas

For the purpose of developing and evaluating this revised critical habitat designation for the northern spotted owl, we identified ''geographical area occupied by the species'' at the time it was listed consistent with the species' distribution, population ecology, and use of space. We based our identification of occupied geographical areas on: (1) The distribution of verified northern spotted owl locations at the time of listing and (2) scientific information regarding northern spotted owl population structure and habitat associations.

We determined the geographical area occupied by the species at the time of listing based in part on a habitat suitability model incorporating the distribution of approximately 4,000 known northern spotted owl territories across the geographical range of the species (USFWS 2011, Appendix C). We used this model rather than just relying on surveyed sites at that time because large areas within the species' geographical range had not been surveyed; therefore the distribution of northern spotted owl populations was incompletely known at the time the species was listed, and remains so today. For this reason, designating critical habitat based solely on the locations of territories identified through surveys would exclude a substantial proportion of the area that would have been occupied by the species at the time of listing, and that provides the physical or biological features essential to the conservation of the species. To address this, we used our descriptions of the physical and biological features to develop a habitat suitability model that enabled us to map the distribution of relative habitat suitability and reliably identify areas that would have supported northern spotted owl territories at the time of listing, based on habitat value (USFWS 2011, Appendix C). Our habitat suitability model was based on GNN (Gradient Nearest Neighbor) vegetation data from 1996, and the locations of approximately 4,000 known owl pairs documented within 3 years of the date of the GNN vegetation data (USFWS 2011, p. C–20). Because our evaluations of model performance demonstrated that the models had good predictive ability (USFWS 2011, Appendix C, p. C–38–42) we used the relative habitat suitability models to predict the distribution of areas that would have supported occupancy by spotted owls at the time of listing.

Because the best available habitat and owl location data and information corresponded to 1996, we made an explicit assumption that the 1996-based habitat suitability model would reliably predict the distribution of spotted owls at the time of listing (1990). This assumption was based on: (1) Our

expectation that patterns of habitat selection by spotted owls would not change over a 6-year period; (2) the high degree of site fidelity exhibited by territorial spotted owls over many years; and (3) the fact that the amount and distribution of older forest habitat, which takes many decades to develop and is a primary component of northern spotted owl habitat, would not have increased significantly in the period between listing and 1996. Therefore, we concluded that the 1996 GNN layer is a reasonable representation of the habitat that would have been occupied by northern spotted owls at the time of listing.

We tested this assumption by analyzing the relationship between our 1996 habitat suitability map and the distribution of 3,723 spotted owl sites known to be occupied at the time of listing (1987–1996). This time period reasonably represents the time of listing because northern spotted owls are relatively long-lived and exhibit a high degree of fidelity to territory core areas; their territory locations are, therefore, relatively stable through time, unless substantial changes occur to territory habitat. For this reason, we consider it highly likely that locations occupied between 1987 and 1990, and 1990 and 1996 were also occupied at the time of listing in 1990. We found that over 85 percent of the proposed critical habitat area was within the estimated home ranges of known spotted owl sites, strongly supporting our assumption that the model reliably predicted areas were occupied at the time of listing.

However, restricting a definition of occupancy to areas known to be used by resident territorial owls overlooks a large segment of the owl population that is not generally reflected in standard survey methodologies, as described below. Northern spotted owl populations consist of the territorial, resident owls, for which we have documentation of occupancy throughout much of the owl's range, described above, but also include nonterritorial adult ''floaters'' and dispersing subadult owls. Both dispersing subadults and nonterritorial floaters are consistently present on the landscape and require suitable habitat to support dispersal and survival until they recruit into the breeding population; this habitat requirement is in addition to that already utilized by resident territorial owls. Nonterritorial owls are difficult to detect in surveys because most surveys rely on territorial defense behavior of resident owls (responding to artificial owl calls) to determine their presence. Because they are difficult to detect, the number and distribution of nonterritorial and dispersing owls is poorly known for any given northern spotted owl population. However, they constitute essential elements of northern spotted owl populations, and can reliably be assumed to occur in suitable habitat within the same landscapes occupied by territorial owls. As stated, the great majority (85 percent) of the area within the identified critical habitat is covered by the home ranges of known owl territories at the time of listing. Because it is well established that dispersing subadults and non-territorial northern spotted owls regularly occupy high-quality habitat in the vicinity of other territorial northern spotted owls, and because our relative habitat suitability models exhibited high accuracy at predicting the probability of presence by owls, we conclude that these areas of high-quality habitat were occupied by the species at the time of listing.

Therefore, based on the best available scientific information regarding population structure of northern spotted owls, ''occupied at the time of listing'' encompasses (1) home ranges of resident, territorial northern spotted owls known from surveys to be present at the time of listing, (2) home ranges of territorial owls that would have been present at the time of listing based on a model developed specifically to predict owl presence based on relative habitat suitability, and (3) areas used by nonterritorial and dispersing owls that were likely to be present within the matrix of territories in a given landscape known to be occupied by resident owl pairs.

Having determined our working definition of the term ''occupied,'' in this instance, we then characterized ''specific areas'' as used in the definition of critical habitat in section 3(5)(A) of the Act, to conform with known patterns of space-use and distribution exhibited by northern spotted owls. Northern spotted owls are wide-ranging organisms that maintain large home ranges and disperse relatively long distances. Home ranges are used regularly by territorial owls for foraging, raising young, and other activities, and are actively defended by the resident pair year-round; as such, we consider these home ranges to be continually occupied by the species. Although much activity is centered on core areas within the home ranges, northern spotted owls are dependent upon the entirety of the home range for prey resources and use it on a regular basis throughout the year. As described earlier, territorial northern spotted owls cover home ranges from roughly 1,400 ac (570 ha) at the southern end of their range (Zabel *et al.* 1995, p. 436) up to over 14,000 ac (5,700 ha) (USDI 1992, p. 23; USFWS 1994 in litt., p. 1) in the northern portion of the species' range. These large home ranges may overlap with those of neighboring northern spotted owls, such that large landscapes may be fully occupied by population clusters in areas where suitable habitat is well distributed. Some demographic study areas still exhibit this pattern over large landscapes today, although overlapping home ranges were more the case when the northern spotted owl was first listed, prior to extensive colonization of the species' range by the barred owl.

To conservatively evaluate the proportion of each subunit that was composed of areas known to be occupied by northern spotted owls at the time of listing, we calculated the area within estimated home ranges (USFWS 2011, p. C–63 Table C–24) for all verified northern spotted owl locations known at the time of listing, as described above. Overall, 85 percent of the area designated is within estimated home ranges of verified territorial northern spotted owls located through surveys at the time of listing; this area is entirely representative of verified owl locations, and does not include habitat occupied based on habitat suitability or nonresident owls. Twenty-two (37 percent) of the 60 subunits have at least 90 percent of their area within verified known home ranges; 41 (68 percent) have at least 70 percent. As explained above, given that these areas represent occupancy by verified resident owls only, and considering the suitable habitat available at the time of listing in these same landscapes, we conclude that the remainder of these areas was occupied by other resident owls that simply were not within surveyed areas, nonterritorial adult owls (floaters), or dispersing subadults.

To help us identify and map potential critical habitat for the owl, we used a three-step modeling framework developed as part of the Revised Recovery Plan that integrates a northern spotted owl habitat model, a habitat conservation planning model, and a population simulation model. The details of this modeling framework are presented in Appendix C of the Revised Recovery Plan (USFWS 2011), and a detailed technical description of the modeling and habitat network evaluation process we used in this revised designation of critical habitat is provided in Dunk *et al.* (2012b, entire). Both of these supporting documents are available at *http://www.regulations.gov* (see **ADDRESSES**), or by contacting the

Oregon Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

The overall approach for critical habitat modeling consisted of three main steps (USFWS 2011, Appendix C, p. C–3) to help refine, select, and evaluate a series of alternative critical habitat networks for the northern spotted owl. Each of these steps helped us to identify a critical habitat network that meets the statutory definition of critical habitat, namely, the distribution of the physical or biological features needed by the species across its geographical range occupied at the time of listing, and the identification of a landscape configuration where these features, as well as any necessary unoccupied areas, are essential to the conservation of the species. These steps are summarized here, and then each is described in further detail.

Step 1: At the outset, the attributes of forest composition and structure and characteristics of the physical environment associated with nesting, roosting, and foraging habitat—physical or biological features used by the species—were identified based on published research, input from individual experts, and analysis of northern spotted owl location and habitat data from nearly 4,000 known owl pairs (USFWS 2011, pp. C–20 to C–28). We then used these physical or biological features of nesting, roosting, and foraging habitats to create a rangewide map of relative habitat suitability using the model MaxEnt (Phillips *et al.* 2006, entire; Phillips and Dudik 2008, entire), based on the habitat selection exhibited by these known owl pairs. In addition to providing a map of relative habitat suitability, this process allowed us to evaluate an area's suitability and determine whether the presence of the species was likely based on an assessment of known species-habitat relationships.

Step 2: We developed northern spotted owl habitat networks based on the relative habitat suitability map using the Zonation conservation planning model (Moilanen and Kujala 2008, entire). The Zonation model used a hierarchical prioritization of the landscape based on relative habitat suitability and other user-specified criteria (e.g., land ownership) to develop the most efficient solutions for incorporating high-value habitat. Zonation analyses were conducted separately for each region to ensure that reserves would be well-distributed across the range of the owl. Zonation also allowed for consideration of land ownership in development of reserve designs.

Step 3: In the last step, we determined where the physical or biological features, as well as unoccupied areas, are essential to the conservation of the species. To do this we used a spatially explicit northern spotted owl population model (HexSim) (Schumaker 2008, entire) to predict relative responses of northern spotted owl populations to different habitat network designs, and evaluated these responses against the recovery objectives and criteria for the northern spotted owl using a rule set based on those criteria. Simulations from these models are not meant to be estimates of what will occur in the future, but rather provide information on trends predicted to occur under different network designs; this allowed us to compare the relative performance of various critical habitat scenarios.

In Step 1 of the modeling framework, we used published research, input from individual experts, and analysis of northern spotted owl location and habitat data to develop models of relative habitat suitability for northern spotted owls. These relative habitat suitability models identify areas with habitat that provides the combination of variables (forest composition and structure, and abiotic factors such as elevation, precipitation, and temperature) with a high predictive probability of supporting northern spotted owls, based on data gathered from known owl sites. Based on the physical or biological features of nesting, roosting, and foraging habitats known to be utilized by resident owls, we used these models to identify areas containing those physical or biological features required by the owl, and to map their distribution across the range of the owl (USFWS 2011, pp. C–27 to C–42, C–62). Because the models are based in large part on data from nearly 4,000 owl sites (USFWS 2011, p. C–62), model outputs highlight surveyed and verified owl home ranges. However, they also identify areas with habitat that supported territorial and non-territorial owls at the time of listing, based on habitat suitability, and areas that may have been unoccupied at the time of listing, but that may be essential for the conservation of the species based on their relative habitat suitability as well as the habitat characteristics needed for population growth or dispersal (see below). To ensure that the variety of physical or biological features used by northern spotted owls across their range is represented in the models, we applied separate habitat models for each of 11 ecological regions, based on differences in forest environments, northern spotted owl habitat use and prey distribution, and variation in ecological conditions (USFWS 2011, C–7 to C–13).

In Step 2 of the modeling framework, we used a habitat conservation planning model (Zonation) (Moilanen *et al.* 2005, entire; Moilanen and Kujala 2008, entire) to develop a northern spotted owl conservation planning model. We used this in the critical habitat process to aggregate areas of greatest relative habitat suitability (areas occupied at the time of listing that provide the physical or biological features, or areas of habitat that may have been unoccupied at the time of listing, but have the potential to play an essential conservation role, for example, in providing connectivity between isolated populations) from Step 1 into discrete units. This process provided a series of maps representing a range of alternative critical habitat networks, each containing a different amount and distribution of northern spotted owl habitat quality (representing differing amounts and configurations of the primary constituent elements). The Zonation model seeks to provide the most efficient design (most habitat value on smallest land area) and allowed us to maximize reliance on public lands to provide what is essential to northern spotted owl conservation.

In Step 3 of the modeling framework, we developed a northern spotted owl population simulation model that allowed us to simulate the relative population responses of northern spotted owls to various habitat conservation network scenarios (HexSim) (Schumaker 2011, entire). In developing this rule, we used this northern spotted owl population simulation model to compare alternative critical habitat networks and evaluate each design's ability to meet the recovery goals and criteria for the northern spotted owl (described further below, and in detail in Dunk *et al.* 2012b). This step of the process enabled us to determine the amount and configuration of physical or biological features on the landscape that are essential to the conservation of the owl, as well as to determine those unoccupied areas essential for the conservation of the species. By evaluating northern spotted owl population metrics, such as relative population size, population trend, and extinction risk that resulted from each scenario evaluated, we are designating the most efficient habitat network necessary to conserve the northern spotted owl (efficient, as noted above, in terms of balancing greatest conservation value for the owl in proportion to acres designated). This network has the potential to support an increasing or

stable population trend of northern spotted owls, exhibits relatively low extinction risk, both rangewide and at the recovery unit scale (recovery units, as identified in the Revised Recovery Plan for the Northern Spotted Owl, are defined by physiographic provinces (USFWS 2011, pp. III–1 to III–2)), and achieves adequate connectivity among recovery units, while prioritizing reliance on public lands.

We determined what is essential to recovery of the northern spotted owl by evaluating the performance of each potential critical habitat scenario considered against the recovery needs of the owl. In contrast with earlier conservation modeling efforts for the northern spotted owl, the modeling framework we utilized does not rely on *a priori* (predefined) rule sets for features such as size of habitat blocks, number of owl pairs per block, or distance between blocks (USFWS 2011, p. C–4) to determine what is essential for the conservation of the species. Instead, we evaluated northern spotted owl population metrics such as relative population size and trend to determine what is essential to owl conservation, both in terms of where and how much of the physical or biological features are essential and how much unoccupied habitat is essential to meet the recovery objectives for the owl, as defined in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011, p. ix) and detailed in our supporting documentation (Dunk *et al.* 2012b, entire).

To accomplish this, we developed a rule set for the identification of critical habitat based on the ability of that habitat to meet the recovery objectives and criteria set forth in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011, p. ix). The recovery objectives for the northern spotted owl are:

(1) Northern spotted owl populations are sufficiently large and distributed such that the species no longer requires listing under the Act;

(2) Adequate habitat is available for northern spotted owls and will continue to exist to allow the species to persist without the protection of the Act; and

(3) The effects of threats have been reduced or eliminated such that northern spotted owl populations are stable or increasing and northern spotted owls are unlikely to become threatened again in the foreseeable future.

The recovery criteria for the northern spotted owl (aside from the requirement for post-delisting monitoring) are:

Recovery Criterion 1—Stable Population Trend: The overall population trend of northern spotted owls throughout the range is stable or increasing over 10 years, as measured by a statistically reliable monitoring effort.

Recovery Criterion 2—Adequate Population Distribution: Northern spotted owl subpopulations within each province (i.e., recovery unit), excluding the Willamette Valley Province, achieve viability, as informed by the HexSim population model or some other appropriate quantitative measure.

Recovery Criterion 3—Continued Maintenance and Recruitment of Northern Spotted Owl Habitat: The future range-wide trend in northern spotted owl nesting/roosting and foraging habitat is stable or increasing throughout the range, from the date of Revised Recovery Plan approval, as measured by effectiveness monitoring efforts or other reliable habitat monitoring programs.

We used the following rule set to compare and evaluate the potential of various habitat scenarios to meet these recovery objectives and criteria, and thus determine what is essential to the conservation of the northern spotted owl:

(1) Ensure sufficient habitat to support population viability across the range of the species.

(a) Habitat can support an increasing or stable population trend, as measured by a population growth rate of 1.0 or greater.

(b) Habitat will be sufficient to insure a low risk of extinction.

(2) Support demographically stable populations in each recovery unit.

(a) Habitat can support an increasing or stable population trend in each recovery unit.

(b) Habitat will be sufficient to insure a low risk of extinction in each recovery unit.

(c) Conserve or enhance connectivity within and among recovery units.

(d) Conserve genetic diversity.

(e) Ensure sufficient spatial redundancy in critical habitat within each recovery unit.

(i) Accommodate habitat disturbance due to fire, insects, disease, and catastrophic events.

(3) Ensure distribution of northern spotted owl populations across representative habitats.

(a) Maintain distribution across the full ecological gradient of the historical range.

(4) Acknowledge uncertainty associated with both future habitat conditions and northern spotted owl population performance—including influence of barred owls, climate change, fire/disturbance risk, and demographic stochasticity—in assessment of critical habitat design.

These critical habitat objectives of supporting population viability and demographically stable populations are intended to be met in concert with the implementation of recovery actions to address other nonhabitat-based threats to the owl.

We applied this rule set to the outcome of HexSim modeling simulations on the various habitat scenarios considered (see Appendix C of the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) and Dunk *et al.* 2012b, entire, for all details). Each HexSim simulation began with a population of 10,000 females (all population metrics are in numbers of females), consisted of 100 replicates and 350 time steps for each habitat scenario considered, and included the introduction of environmental stochasticity. We then evaluated the relative performance of each habitat scenario using numerous metrics to assess the ability of that scenario to meet the specified recovery goals for the northern spotted owl, as laid out in our rule set for identifying critical habitat; these metrics were evaluated at the scale of each region, as well as collectively rangewide. Our metrics of population performance resulting from each habitat scenario considered included:

- The percentage of simulations during which the rangewide population fell below 1,250 individuals.
- The percentage of simulations during which the rangewide population fell below 1,000 individuals.
- The percentage of simulations during which the rangewide population fell below 750 individuals.
- The percentage of simulations during which the population fell below 250 in each region (using 250 as a quasi-extinction threshold).
- The percentage of simulations during which the population fell below 100 in each region (using 100 as a quasi-extinction threshold).
- The percentage of simulations that went to extinction (population = 0) in each region.
- The mean population size from time step 150 to time step 350 in each region.
- The mean population size at the last time step in each region.
- The mean population size at the last time step rangewide.

Measures of extinction risk are used as an indirect measure of sufficient population abundance, as well as viability.

These metrics were used to comparatively evaluate the ability of

each scenario under consideration to determine what is essential for the conservation of the species as informed by our rule set. We selected habitat scenarios for further evaluation if they outperformed the other scenarios under consideration in terms of being better able to meet the population abundance, viability, and trend criteria both across regions and rangewide. In all cases, we attempted to identify the most efficient (smallest) total area that would meet the population goals essential to recovery. Our final critical habitat designation is based on the habitat network that best met all of these criteria, and then was further refined, as described below.

We also focused on public lands to the maximum extent possible (see Dunk *et al.* 2012b, entire, for specific details). In this step, we compared scenarios that did not discriminate between various land ownerships, and those that prioritized publicly owned lands. As Federal agencies have a mandate under section 7(a)(1) of the Act to utilize their authorities in furtherance of the purposes of the Act by carrying out programs for the conservation of listed species, we looked first to Federal lands for critical habitat. However, in some areas of limited Federal ownership, State and private lands may provide areas determined to be essential to the northern spotted owl by contributing to demographic support and connectivity to facilitate dispersal and colonization. In all cases, if the scenarios under consideration provided equal contribution to recovery, as measured by the population metrics described above, we chose the scenario that prioritized inclusion of federally owned lands. State and private lands were included only if they were necessary to achieve conservation of the species, and were determined to provide either occupied areas that support the PCEs or unoccupied areas essential for the conservation of the owl. We also considered Indian lands in our evaluations; if habitat scenarios performed equally well with or without Indian lands, we did not include them (see Indian Lands, below).

To determine which of the numerous potential arrays of habitat we considered contained only those areas that are essential to the conservation of the northern spotted owl, we evaluated each of them according to the rule set and criteria detailed above. Briefly summarizing, all of the habitat networks we assessed contained varying amounts of the physical or biological features needed by the northern spotted owl in varying amounts and spatial arrangements across the range of the species. Our first consideration in determining which of these scenarios contained the physical or biological features in the quantity and configuration essential to the conservation of the species (i.e., the physical and biological features essential to the conservation of the species) was our evaluation of how well the network performed in terms of contributing toward the recovery criteria for the northern spotted owl; we used the recovery criteria as our standard for the conservation of the species.

To ensure that we designated only what is essential to the species' conservation, our secondary consideration was efficiency. For our purposes, we evaluated efficiency both in terms of number of acres and landownership. Some of the networks we evaluated were smaller than this final designation, or did not include any State or private lands; however, such networks failed to meet the recovery criteria required to achieve the conservation of the species, and therefore could not be considered to provide the quantity and configuration of the physical or biological features essential to the conservation of the species. Other potential designations were significantly larger than this final designation and while they were also capable of meeting the recovery criteria, they did not provide proportionately greater conservation value relative to the additional area (as measured, for example, in relative projected numbers of owls). We concluded that such networks therefore included large areas of habitat that may contribute to recovery, but that are not necessary to achieve the recovery criteria for the northern spotted owl, therefore these superfluous areas could not be considered essential to the conservation of the species.

Finally, our assessment of potential habitat networks, based not only on the population models but additionally refined by expert opinion, as described below, indicated that critical habitat limited to areas presently occupied by the northern spotted owl would not be sufficient to achieve the recovery criteria for the species, as such a designation would lead to inadequate population distribution and inadequate population connectivity (50 CFR 424.12(e)). Modeling led us to a similar conclusion regarding areas that were occupied at the time of listing; networks limited to such areas were not capable of meeting the recovery criteria for the species, and the models assisted us in identifying those additional specific areas of habitat unoccupied at the time of listing that are essential in terms of achieving the conservation of the species. Another element of an essential network was therefore the identification of sufficient areas of suitable habitat or potentially suitable habitat not presently occupied by the northern spotted owl, or that was not occupied at the time of listing, to achieve the conservation of the species, in conjunction with occupied habitat.

Our final designation is the critical habitat network that includes the quantity and spatial configuration of habitat that meets the requirement that it contain occupied areas with the essential physical and biological features or unoccupied areas that are themselves essential for conservation of the species by achieving the recovery criteria for the northern spotted owl while avoiding the designation of areas of habitat that do not make an essential contribution to the conservation of the species. This essential habitat network is composed predominantly of areas occupied at the time of listing and that contain the essential physical or biological features, in conjunction with some areas that may have been unoccupied at the time of listing, to collectively comprise the habitat configuration and quantity that most efficiently meets the recovery criteria for the species. All areas in this final critical habitat designation, whether considered occupied at the time of listing or unoccupied at the time of listing, are therefore considered essential to the conservation of the species. The specific modeling outcomes and our evaluation of each potential critical habitat network are presented in detail in Dunk *et al.* 2012b.

It is important to recognize that although the application of this modeling framework provided the foundation for identifying those areas that meet the definition of critical habitat for the northern spotted owl, the models do not simply produce a map of critical habitat. Working from the model results, we then further refined the model-based map units, after considering land ownership patterns, interagency coordination, and best professional judgment, with the objective of increasing the efficiency and effectiveness of the critical habitat designation, as well as making corrections based on ground truthing and local knowledge. The process generally consisted of modifying boundaries to better conform to existing administrative and landscape features, removing small areas of relatively lower-suitability habitat, and incorporating additional areas that may have been unoccupied at the time of listing, but were determined to be essential for population connectivity,

for population growth, or to accommodate maintenance of suitable habitat on the landscape for owls in the face of natural disturbance regimes (e.g., fire) or competition with the barred owl, while retaining the overall configuration of the model-based maps. In addition, as part of this refinement process, expert knowledge helped us to identify essential areas such as the unique oak woodland ecotype used by northern spotted owls at the southernmost extent of the species' range in Napa, Sonoma, and Marin Counties, California. We used the population simulation model to evaluate whether this revised critical habitat network continued to provide what is essential to the conservation of the northern spotted owl, and used this same process to evaluate changes made between the proposed and final rule (see Changes from Proposed Rule for details).

Summary of How We Determined Where Physical and Biological Features and Unoccupied Areas Are Essential to Conservation of the Species

The decision of where the requisite physical and biological features and unoccupied areas are essential to the northern spotted owl was made by identifying those areas in the range of the owl that are necessary to achieving a relatively high likelihood of meeting the recovery objectives described in the Revised Recovery Plan (USFWS 2011, p. ix), while at the same time minimizing the inclusion of areas that are relatively less important or not necessary to spotted owl recovery. Striking this balance required by the Act—designating only those areas that contain the essential features or are themselves essential for conservation of the species and not unnecessarily designating the entire geographical area that is or can be occupied by the species—was accomplished using the best available information: a combination of scientific modeling, expert scientific opinion of agency biologists and peer reviewers, and careful consideration of public comment.

We made sure that this final critical habitat designation includes only what is essential to the species' conservation by evaluating a variety of potential critical habitat networks and assessing their relative probability of meeting recovery objectives and, secondarily, their relative ''efficiency'' in meeting these objectives. The various scenarios were designed to bracket a variety of conditions and included different aggregations of total habitat area, landscape juxtaposition, and forest conditions. Some were smaller or larger in total size than this final designation, and some did or did not include Federal matrix lands, State lands, or private lands. The process of comparing alternative networks and population results is described in detail in the Modeling Supplement (Dunk *et al.* 2012b). When compared to other possible network scenarios, we conclude the final identification of critical habitat either contains essential physical and biological features or is otherwise essential because it has the highest likelihood of meeting recovery objectives in the most efficient manner for the following reasons.

(1) It ensures that northern spotted owl populations are sufficiently large to exhibit low extinction risk at the rangewide scale. Under the final designation, modeled rangewide populations have less than a 10 percent probability of declining to fewer than 1,000 females, and a 3 percent probability of declining to fewer than 750 females. Modeled population size and extinction risk results for the designation are within the top 10 percent of all alternative networks, yet the designation is much smaller than other top-ranking alternatives.

(2) It ensures that northern spotted owl populations are well-distributed across the geographic range of the species by selecting a habitat network that supports population sizes with low extinction risk within each of 11 modeling regions. Modeling region-specific population sizes in the final designation are in the top 10 percent of all alternative networks.

(3) It ensures that adequate amounts of current and future habitat is available for spotted owls to persist and recover by designating a habitat network consisting of approximately 50 percent of the available high-suitability spotted owl habitat rangewide. An additional 21 percent of high-quality habitat is encompassed within Congressionally Reserved lands that are not designated, but will retain their value for spotted owls. This high-quality habitat, in addition to areas required for population connectivity, is necessary to support rangewide populations with low extinction risk at both rangewide and regional scales.

(4) Compared to previous spotted owl conservation strategies, it provides increased redundancy in habitat to help buffer potential adverse impacts due to climate change and other stochastic (i.e., unpredictable) events by enlarging the total area of the final designation within the fire-prone portions of the northern spotted owl's range. This means that the final designation supports larger populations in some modeling regions than would be minimally required to achieve low extinction risk. Although it is impossible to predict with precision how much redundancy may be required to deal with future changes in forest conditions, this is essential to ameliorating the potential impacts of fire, insects, and forest disease on spotted owls.

(5) The balancing of population objectives and parsimony resulted in a final designation that encompasses 50 percent of the total available high-suitability habitat rangewide and less than nine percent of low-quality habitat, and supported population size and extinction risk within the top 10 percent of all alternatives. Other larger alternatives had similar or slightly better population characteristics, but contained much larger proportions of lower-suitability habitat. The small amount of low-quality habitat contained in the final designation is essential because it provides for population growth and connectivity both within regional populations and between populations; however, we determined that additional lower-suitability habitat was not necessary to the conservation of the species.

We considered but rejected potential critical habitat networks that provided less total area, that did not include Federal matrix lands, or that did not include some State or private lands where Federal lands were lacking, because these networks had a significantly lower likelihood of meeting recovery objectives as measured by demographic modeling results and expert scientific opinion. For example, modeled rangewide population sizes in this final designation were 1.7 times larger than under the proposed rule's Possible Outcome 4, which did not include any State or private lands, and nearly twice the size of populations under 2008 critical habitat. This larger population size is essential because it results in low extinction risk. Likewise, we considered but rejected several potential networks that included significantly more total area than the final designation. These potential networks had a high probability of meeting recovery objectives as measured by model results and expert opinion, but they did not confer much of a net increase in the likelihood of meeting recovery objectives beyond what is provided by the final designation. This lack of parsimony, combined with a lack of a proportional increase in measurable demographic performance, justified the rejection of these larger potential networks when compared to the final designation.

This methodological approach was generally supported by the scientific peer reviewers. One peer reviewer felt the proposed critical habitat identified too much total area, and another peer reviewer felt that more land area should be included, but most peer reviewers felt the total area and the juxtaposition of land areas seemed reasonable and scientifically justified given the current status of the owl and the recovery objectives. Most of these experts also concluded that the use of the modeling process was justified for informing the final decision.

In sum, we believe this final designation of critical habitat for the northern spotted owl meets the intent of the Act by identifying those areas containing essential features or are otherwise essential in a way that has a very high probability of providing for the conservation of the species, while minimizing the potential for unnecessarily including areas of low conservation value to the species.

Unoccupied Areas

Based on the northern spotted owl's wide-ranging use of the landscape, and the distribution of known owl sites at the time of listing across the units and subunits designated as critical habitat in this rule, we find that all units and all subunits meet the Act's definition of being within the geographical area occupied by the species at the time of listing.

As noted above in *Occupied Areas,* within the units and subunits designated as critical habitat, each consists predominantly of habitat occupied by the species at the time of listing. However, parts of most units and subunits contain a forested mosaic that includes younger forests that may not have been occupied at the time of listing; we evaluated such areas of younger forest as unoccupied at the time of listing. Unoccupied areas must meet the standard of section 3(5)(a)(ii) of the Act: They must be determined to be essential for the conservation of the species. In addition, there are some areas we have concluded were highly likely occupied at the time of listing, based on the presence of suitable habitat and our predictive models, but acknowledge there is some element of uncertainty to recognizing these areas as occupied under the statutory definition due to the lack of survey information. Therefore, we also evaluated all areas that we concluded were likely occupied but which lack survey information applying the standard of section 3(5)(A)(ii) of the Act, and have determined that all such areas included in this designation are essential for the conservation of the species. Finally, as noted earlier, as a result of our application of the modeling framework and refinement process described above, in which we evaluated various habitat scenarios to identify the network that is essential to the conservation of the species by providing the quantity and configuration of habitat essential for the conservation of the species, we have additionally determined that all areas identified here as critical habitat, whether occupied at the time of listing or unoccupied at the time of listing, are essential for the conservation of the species and therefore meet the definition of critical habitat under section 3(5)(A)(ii) of the Act.

Thus, even if not occupied at the time of listing, all units and subunits designated as critical habitat are essential for the conservation of the species because, in addition to nesting, roosting, foraging, and dispersal habitat, they provide connectivity between occupied areas, room for population growth, and the ability to provide sufficient suitable habitat on the landscape for owls in the face of natural disturbance regimes (e.g., fire).

In general, northern spotted owls require large areas of habitat due to their expansive home range requirements and the need for connectivity between subpopulations to maintain genetic diversity and support stable, viable populations over the long term. The northern spotted owl was initially listed in large part due to past habitat loss and degradation. In addition, recent work has confirmed that northern spotted owls require additional areas of habitat to persist in the face of competition with barred owls (Dugger *et al.* 2011, p. 2467). Given the effects of past habitat loss and the increased habitat area needed to offset competition from the barred owl, our assessment indicates that large areas of contiguous areas of nesting, roosting, and foraging habitat are essential to sustaining viable northern spotted owl populations and meeting recovery goals.

In addition, because past habitat loss and degradation was identified as a major threat to the northern spotted owl at the time of listing and because this threat currently continues, conservation and recovery of the species is dependent in part on development of additional habitat to allow for population growth and recovery. Therefore, portions of the habitat mosaic in some subunits designated as critical habitat within the geographical area occupied by the species at the time of listing consist of younger or partially harvested forest. These are essential for the conservation of the species because they are capable of developing the PCEs that support nesting, roosting, or foraging by northern spotted owls that will be necessary for population growth. Typically the result of past timber harvest or wildfire, these areas of younger forest contain the elements conducive to fully developing the physical or biological features essential to the conservation of the owl (they are of suitable elevation, climate, and forest community type). They may, however, be lacking some element of the physical or biological features, such as large trees or dense canopies that are associated with nesting habitat. In particular, of 60 subunits designated, 4 (NCO–4, NCO–5, and ORC–1) contain proportionally greater areas of younger forests that are essential for the conservation of the species, because they can develop additional habitat necessary to support viable northern spotted owl populations in the future. These subunits are located within Southwestern Washington and Oregon Coast Ranges Areas of Special Concern (Thomas *et al.* 1990, pp. 66–69), areas described as exhibiting a scarcity of suitable habitat due to extensive timber harvest. The recovery goal of achieving viable populations distributed across the range of the owl cannot be achieved without these areas; therefore, we have determined them to be essential for the conservation of the species.

Finally, there are portions of two subunits that function primarily for connectivity between populations. Although portions of these subunits may not have been occupied at the time of listing, these areas contain the dispersal and foraging habitat to support movement between adjacent subunits and are therefore essential to provide population connectivity. Many of these areas are also anticipated to develop into habitat capable of supporting nesting pairs in the future. In 1990, the Interagency Scientific Committee (ISC) (Thomas *et al.* 1990, entire) identified ''Areas of Special Concern'' in the Draft Strategy for the Conservation of the Northern Spotted Owl. The ISC defined Areas of Special Concern as lands where past natural occurrences and human actions had adversely affected habitat more than in the remainder of the physiographic province under consideration (Thomas *et al.* 1990, p. 66). Within the Areas of Special Concern described by the ISC (Thomas *et al.* 1990, pp. 66–69), we identified areas that were strategically located between subunits that would otherwise be demographically isolated. Of 60 subunits designated, two (ORC–4 and ECS–3) are identified as functioning

primarily for population connectivity with less than 70 percent of the subunit covered by survey-located owl sites.

Our evaluation of the various habitat scenarios considered in the modeling process described above enabled us to determine the amount and configuration of habitat essential for the conservation of the owl, based on the relative ability of that habitat network to meet the recovery criteria of stable or increasing populations and adequate distribution of viable populations. Although this evaluation was primarily based on areas we know to have been occupied at the time of listing, our evaluation of the distribution and configuration of the physical and biological features essential to the conservation of the owl additionally identified areas that may not have been occupied at the time of listing, if those areas were essential to meeting the recovery goals for the species. We have determined these areas to be essential for the conservation of the species, to provide for dispersal and connectivity between currently occupied areas, allow space for population growth, and provide habitat replacement in the event of disturbances, such as wildfires and competition with barred owls. Our evaluation of alternative habitat networks, described above, indicates that the specific areas identified in this designation are necessary to achieve the amount and configuration of habitat that meets the recovery criteria for the species. Because these areas do so efficiently (without designating more areas than are needed, or designating areas that would not make a significant contribution to conservation value), we have determined that these areas are essential for the conservation of the species. As described above, we have determined that a critical habitat designation that does not include these areas, even if they may not be occupied, would be inadequate to ensure the conservation of the species. The resulting revised critical habitat represents the amount and spatial distribution of habitats that we have determined to be essential for the conservation of the northern spotted owl.

This designation is an improvement over the previous designation in that it anticipates that in geographical regions with drier forests and more dynamic natural disturbance regimes, land managers will consider taking a landscape approach to managing critical habitat. This landscape approach would recognize that large areas are essential in these regions to accommodate disturbance-driven shifts in the physical or biological features essential for the conservation of the northern spotted owl, and that restorative management actions may be needed across these landscapes to help manage for resilience in such a dynamic ecosystem. These large landscapes, although essential to provide for the conservation of the northern spotted owl, do include within their boundaries several particular types of areas that are not included in critical habitat, because they cannot support northern spotted owl habitat. The following types of areas are not critical habitat for the northern spotted owl, and are not included in the revised designation:

- Meadows and grasslands. These include dry, upland prairies and savannas found in the valleys and foothills of western Washington, Oregon, and northwest California; subalpine meadows; and grass and forb dominated cliffs, bluffs and grass balds found throughout these same areas. Dominated by native grasses and diverse forbs, they may include a minor savanna component of Oregon white oak, Douglas-fir, or Ponderosa pine.
- Oak and aspen (*Populus* spp.) woodlands. Oak woodlands are characterized by an open canopy dominated by Oregon white oak but may also include ponderosa pine, California black oak, Douglas-fir, or canyon live oak. The understory is relatively open with shrubs, grasses and wildflowers. Oak woodlands are typically found in drier landscapes and on south-facing slopes. Note this exception for oak woodlands does not include tanoak (*Notholithocarpus densiflorus*) stands, closed-canopy live oak (*Quercus agrifolia*) woodlands and open-canopied valley oak (*Quercus lobata*) and mixed-oak woodlands in subunits ICC–6 and RDC–5 in Napa, Sonoma, and Marin Counties, California. Aspen woodlands are dominated by aspen trees with a forb, grass or shrub understory and are typically found on mountain slopes, rock outcrops and talus slopes, canyon walls, and some seeps and stream corridors. This forest type also can occur in riparian areas or in moist microsites within drier landscapes.
- Manmade structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the land on which they are located.

When determining critical habitat boundaries, we made every effort to avoid including these areas because they lack physical or biological features for the northern spotted owl. Due to the limitations of mapping at such fine scales, however, we were often not able to segregate these areas from areas shown as critical habitat on critical habitat maps suitable in scale for publication within the Code of Federal Regulations. Thus, we have included regulatory text clarifying that these areas are not included in the designation even if within the mapped boundaries of critical habitat, as a Federal action involving these lands would not trigger section 7 consultation with respect to effects to critical habitat unless the specific action would affect the physical or biological features in the adjacent critical habitat.

VIII. Final Critical Habitat Designation

Consistent with the standards of the Act and our regulations we have identified 9,577,969 ac (3,876,064ha) in 11 units and 60 subunits as meeting the definition of critical habitat for the northern spotted owl. The 11 units we have identified as critical habitat are: (1) North Coast Olympics, (2) Oregon Coast Ranges, (3) Redwood Coast, (4) West Cascades North, (5) West Cascades Central, (6) West Cascades South, (7) East Cascades North, (8) East Cascades South, (9) Klamath West, (10) Klamath East, and (11) Interior California Coast Ranges. All of the critical habitat units and subunits identified were occupied at the time of listing; however, some units may include some smaller areas that were not known to be occupied at the time of listing but have been determined to be essential to the conservation of the species. In addition, as described above, we have determined that all areas being designated are essential to the conservation of the species. Land ownership of the designated critical habitat includes Federal and State lands. No tribal lands are included in the critical habitat designation. The approximate area of each critical habitat unit is shown in Table 6. Table 7 gives totals by land ownership.

TABLE 6—REVISED CRITICAL HABITAT UNITS FOR THE NORTHERN SPOTTED OWL

[Area estimates reflect all land within critical habitat unit boundaries.]

Critical habitat unit	Land ownership	Acres	Hectares
Unit 1—North Coast Olympics	Federal	696,230	281,754
	State	128,270	51,909
	Total	824,500	333,663
Unit 2—Oregon Coast Ranges	Federal	788,919	319,264
	State	70,945	28,711
	Total	859,864	347,975
Unit 3—Redwood Coast	Federal	111,258	45,025
	State	48,912	19,794
	Local government	20,684	8,371
	Total	180,855	73,189
Unit 4—West Cascades North	Federal	541,476	219,127
	State	798	323
	Total	542,274	219,450
Unit 5—West Cascades Central	Federal	908,861	367,802
	State	825	334
	Total	909,687	368,136
Unit 6—West Cascades South	Federal	1,354,989	548,345
	State	209	85
	Total	1,355,198	548,429
Unit 7—East Cascades North	Federal	1,338,988	541,869
	State	6,534	2,644
	Total	1,345,523	544,514
Unit 8—East Cascades South	Federal	368,380	149,078
Unit 9—Klamath West	Federal	1,186,750	480,260
	State	10,639	4,305
	Total	1,197,389	484,565
Unit 10—Klamath East	Federal	1,049,826	424,850
	State	2,905	1,175
	Total	1,052,731	426,025
Unit 11—Inner California Coast Ranges	Federal	940,721	380,696
	State	848	343
	Total	941,568	381,039
Grand Total		9,577,969	3,876,064

Note: Area sizes may not sum due to rounding.

TABLE 7—REVISED CRITICAL HABITAT UNITS FOR THE NORTHERN SPOTTED OWL, DESCRIBING AREA INCLUDED UNDER DIFFERENT LANDOWNERSHIPS

	Acres	Hectares
USFS	7,957,787	3,220,399
BLM	1,328,612	537,670
NPS	0	0
State	270,886	109,624
Local Government	20,684	8,371
Private	0	0
Other Federal (DOD)	0	0
Tribal	0	0
Total	9,577,969	3,876,064

We present brief descriptions of all units and their subunits below. For each subunit, we describe the proportion of the area that is covered by verified northern spotted owl home ranges at the time of listing. As described above in the section Criteria Used to Identify Critical Habitat, all areas being designated that were occupied at the time of listing contain the physical or biological features essential to the conservation of the northern spotted owl, and which may require special management considerations or protection. In addition, there are smaller areas of suitable habitat within subunits that we considered likely occupied by nonterritorial owls and dispersing subadults, at the time of listing, as well as some smaller areas of younger forest within the larger habitat mosaic that may have been unoccupied at the time of listing. Due to some potential for uncertainty in these latter two categories of areas in terms of occupancy at the time of listing, we evaluated all such areas applying the standard under section 3(5)(A)(ii) of the Act, and have determined that all such areas included in this designation are essential to the conservation of the species. In addition, as a result of our application of the modeling framework described earlier, we have determined that all areas identified here as critical habitat, whether occupied at the time of listing or unoccupied at the time of listing, are essential to the conservation of the species and therefore meet the definition of critical habitat under section 3(5)(A)(ii) of the Act. This applies to all units and subunits described below.

Unit 1: North Coast Ranges and Olympic Peninsula (NCO)

Unit 1 consists of 824,500 ac (333,623 ha) and contains five subunits. This unit consists of the Oregon and Washington Coast Ranges Section M242A, based on section descriptions of forest types from Ecological Subregions of the United States (McNab and Avers 1994a, Section M242A). This region is characterized by high rainfall, cool to moderate temperatures, and generally low topography (1,470 to 2,460 ft (448 to 750 m)). High elevations and cold temperatures occur in the interior portions of the Olympic Peninsula, but northern spotted owls in this area are limited to the lower elevations (less than 2,950 ft (900 m)). Forests in the NCO are dominated by western hemlock, Sitka spruce, Douglas-fir, and western red cedar (*Thuja plicata*). Hardwoods are limited in species diversity (consist mostly of bigleaf maple and red alder (*Alnus rubra*)) and distribution within this region, and typically occur in riparian zones. Root pathogens like laminated root rot (*Phellinus weirii*) are important gap formers, and vine maple (*Acer circinatum*), among others, fills these gaps. Because Douglas-fir dwarf mistletoe is unusual in this region, northern spotted owl nesting habitat consists of stands providing very large trees with cavities or deformities. A few nests are associated with western hemlock dwarf mistletoe (*Arceuthobium tsugense* subsp. *tsugense*). Northern spotted owl diets are dominated by species associated with mature to late-successional forests (flying squirrels, red tree voles), resulting in similar definitions of habitats used for nesting/roosting and foraging by northern spotted owls.

Subunit Descriptions: Unit 1

NCO–1. The NCO–1 subunit consists of approximately 293,539 ac (118,791 ha) in Clallam, Jefferson, Grays Harbor, and Mason Counties, Washington, and comprises lands managed by U.S. Forest Service (USFS) and State of Washington. The USFS manages 230,966 ac (93,309 ha) as Late-successional Reserves to maintain functional, interactive, late-successional and old-growth forest ecosystems and 62,966 ac (25,481 ha) under the adaptive management area land use allocation. Threats in this subunit include current and past timber harvest, competition with barred owls, and isolation on a peninsula (along with subunit NCO–2). This subunit is expected to function primarily for demographic support of the overall population. NCO–1 is located primarily in the watersheds of Lyre, Hoko, Soleduck, Hoh, Quinault, Queets, and Clearwater Rivers, and includes the northern part of the Lower Chehalis River watershed.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 94 percent of the area of NCO–1 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

NCO–2. The NCO–2 subunit consists of approximately 213,633 ac (86,454 ha) in Kitsap, Clallam, Jefferson, Grays Harbor, and Mason Counties, Washington, and comprises lands managed by the USFS. The USFS manages 173,682 ac (70,287 ha) as Late-successional Reserves to maintain functional, interactive, late-successional and old-growth forest ecosystems and 39,083 ac (15,816 ha) under the adaptive management area land use allocation. Threats in this subunit include current and past timber harvest, competition with barred owls, and isolation on a peninsula (along with subunit NCO–1). This subunit is expected to function primarily for demographic support of the overall population. NCO–2 is located primarily in the watersheds of the Elwha, Dungeness, Quilcene, Snow, Skokomish, and Dosewallips rivers.

Our evaluation of sites known to be occupied at the time of listing indicate that approximately 95 percent of the area of this subunit was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

NCO–3. We exempted subunit NCO–3 from the final designation of critical habitat under Section 4(a)(3) of the Act (See Exemptions section below). This subunit is comprised approximately 14,313 ac (5,792 ha) of lands managed by the Department of Defense as part of Joint Base Lewis-McChord under their integrated natural resource management plan (INRMP).

NCO–4. The NCO–4 subunit consists of approximately 179,745 ac (72,740 ha) in Clatsop, Columbia, Tillamook, and Washington Counties, Oregon, and comprises Federal lands and lands managed by the State of Oregon. Of this subunit, 117,033 ac (47,361 ha) are managed as part of the Tillamook and Clatsop State Forests for multiple uses including timber revenue production, recreation, and wildlife habitat according to the Northwest Oregon State Forest Management Plan (ODF 2010a, entire). Federal lands encompass 62,712 ac (25,379 ha) of this subunit and are managed as directed by the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats from current and past timber harvest and competition with barred owls. This subunit is expected to function primarily for demographic support to the overall population. This subunit is isolated from the nearest subunit to the north but is adjacent to subunit NCO–5 to the south.

Our evaluation of sites known to be occupied at the time of listing indicate that approximately 63 percent of the area of NCO–4 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider a large part of this subunit to have been occupied at the time of listing. There are some areas of younger forest in this subunit that may have been unoccupied at the time of listing. We have

determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat in this subunit is especially important for providing for population growth and additional demographic support in this region. The development of additional suitable habitat in this subunit is needed to support viable northern spotted owl populations over the long term. The recruitment of additional suitable habitat will also contribute to the successful dispersal of northern spotted owls, and serve to buffer northern spotted owls from competition with the barred owl.

NCO–5. The NCO–5 subunit consists of approximately 142,937 ac (57,845 ha) in Yamhill, Lincoln, Tillamook, and Polk Counties, Oregon, and comprises lands managed by the State of Oregon, the BLM, and the USFS. Of this subunit 11,067 ac (4,479 ha) are managed by the State of Oregon for multiple uses including timber revenue production, recreation, and wildlife habitat according to the Northwest Oregon State Forest Management Plan (ODF 2010a, entire), and may be considered for exclusion from the final critical habitat designation. Federal lands comprise 131,870 ac (53,666 ha) and are managed as directed by the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats from current and past timber harvest and competition with barred owls. This subunit is expected to function primarily for demographic support to the overall population and north-south connectivity between subunits and critical habitat units.

Our evaluation of sites known to be occupied at the time of listing indicate that approximately 63 percent of the area of NCO–5 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider a large part of this subunit to have been occupied at the time of listing. There are some areas of younger forest in this subunit that may have been unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat in this subunit is especially important for providing for population growth and additional demographic support in this region. The development of additional suitable habitat in this subunit is needed to support viable northern spotted owl populations over the long term. The recruitment of additional suitable habitat will also contribute to the successful dispersal of northern spotted owls, and serve to buffer northern spotted owls from competition with the barred owl.

Unit 2: Oregon Coast Ranges (OCR)

Unit 2 consists of 859,864 ac (347,975 ha) and contains six subunits. This unit consists of the southern third of the Oregon and Washington Coast Ranges Section M242A, based on section descriptions of forest types from Ecological Subregions of the United States (McNab and Avers 1994a, Section M242A). We split the section in the vicinity of Otter Rock, OR, based on gradients of increased temperature and decreased moisture that result in different patterns of vegetation to the south. Generally this region is characterized by high rainfall, cool to moderate temperatures, and generally low topography (980 to 2,460 ft (300 to 750 m)). Forests in this region are dominated by western hemlock, Sitka spruce, and Douglas-fir; hardwoods are limited in species diversity (largely bigleaf maple and red alder) and distribution, and are typically limited to riparian zones. Douglas-fir and hardwood species associated with the California Floristic Province (tanoak, Pacific madrone, black oak, giant chinquapin (*Castanopsis chrysophylla*)) increase toward the southern end of the OCR. On the eastern side of the Coast Ranges crest, habitats tend to be drier and dominated by Douglas-fir. Root pathogens like laminated root rot are important gap formers, and vine maple among others fills these gaps. Because Douglas-fir dwarf mistletoe is unusual in this region, northern spotted owl nesting habitat tends to be limited to stands providing very large trees with cavities or deformities. A few nests are associated with western hemlock dwarf mistletoe. Northern spotted owl diets are dominated by species associated with mature to late-successional forests (flying squirrels, red tree voles), resulting in similar definitions of habitats used for nesting/roosting and foraging by northern spotted owls. One significant difference between OCR and NCO is that woodrats comprise an increasing proportion of the diet in the southern portion of the modeling region.

Subunit Descriptions—Unit 2

OCR–1. The OCR–1 subunit consists of approximately 110,657 ac (44,781 ha) in Polk, Benton and Lincoln Counties, Oregon, and comprises lands managed by the State of Oregon, the BLM, and the USFS. Of this subunit 6,612 ac (2,676 ha) are managed by the State of Oregon for multiple uses including timber revenue production, recreation, and wildlife habitat according to the Northwest Oregon State Forest Management Plan (ODF 2010a, entire). Federal lands comprise 104,045 ac (42,105 ha) and are managed as directed by the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats from current and past timber harvest and competition with barred owls. This subunit is expected to function primarily for demographic support to the overall population and north-south connectivity between subunits and critical habitat units.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 55 percent of the area of OCR–1 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider a large part of this subunit to have been occupied at the time of listing. There are some areas of younger forest in this subunit that may have been unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat in this subunit is especially important for providing for population growth and additional demographic support in this region. The development of additional suitable habitat in this subunit is needed to support viable northern spotted owl populations over the long term. The recruitment of additional suitable habitat will also contribute to the successful dispersal of northern spotted owls, and serve to buffer northern spotted owls from competition with the barred owl.

OCR–2. The OCR–2 subunit consists of approximately 261,405 ac (105,787 ha) in Lane, Benton, and Lincoln Counties, Oregon, and comprises lands

managed by the State of Oregon, the BLM, and the USFS. Of this subunit 18,504 ac (7,448 ha) are managed by the State of Oregon for multiple uses including timber revenue production, recreation, and wildlife habitat according to the Northwest Oregon State Forest Management Plan (ODF 2010a, entire). Federal lands comprise 242,901 ac (98,298 ha) and are managed as directed by the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats from current and past timber harvest and competition with barred owls. This subunit is expected to function primarily for demographic support to the overall population and north-south connectivity between subunits.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 77 percent of the area of OCR–2 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

OCR–3. The OCR–3 subunit consists of approximately 203,681 ac (82,427 ha) in Lane and Douglas Counties, Oregon, and comprises lands managed by the State of Oregon, the BLM, and the USFS. Of this subunit 5,082 ac (2,07 ha) are managed by the State of Oregon for multiple uses including timber revenue production, recreation, and wildlife habitat according to the Northwest Oregon State Forest Management Plan (ODF 2010a, entire). Federal lands comprise 198,599 ac (80,369 ha) and are managed as directed by the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats from current and past timber harvest and competition with barred owls. This subunit is expected to function primarily for demographic support to the overall population and for both north-south and east-west connectivity between subunits.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 97 percent of the area of OCR–3 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

OCR–4. The OCR–4 subunit consists of approximately 8,263 ac (3,344 ha) in Lane and Douglas Counties, Oregon, and comprises lands managed by the BLM as directed by the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats from current and past timber harvest and competition with barred owls. This subunit is expected to function primarily for east-west connectivity between subunits and critical habitat units, and between the Oregon coast and the western Cascades.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 43 percent of the area of OCR–4 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider a large part of this subunit to have been occupied at the time of listing. There are some areas of younger forest in this subunit that may have been unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat in this subunit is especially important for providing essential connectivity between currently occupied areas to support the successful dispersal of northern spotted owls, and may also help to buffer northern spotted owls from competition with the barred owl.

OCR–5. The OCR–5 subunit consists of approximately 176,905 ac (71,591ha) in Coos and Douglas Counties, Oregon, and comprises lands managed by the State of Oregon, the BLM, and the USFS. Of this subunit 40,747 ac (16,490 ha) are managed by the State of Oregon for multiple uses including sustained economic benefit through timber harvest and management, recreation, and wildlife habitat according to the Elliot State Forest Management Plan (ODF 2011, entire). Federal lands comprise 136,158 ac (55,101 ha) and are managed as directed by the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats from current and past timber harvest and competition with barred owls. This subunit is expected to function primarily for demographic support to the overall population and for north-south, and potentially east-west, connectivity between subunits.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 94 percent of the area of OCR–5 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

OCR–6. The OCR–6 subunit consists of approximately 81,900 ac (33,144 ha) in Coos and Douglas Counties, Oregon, and comprises lands managed by the BLM as directed by the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats from current and past timber harvest and competition with barred owls. This subunit is expected to function primarily for demographic support to the overall population and for north-south connectivity between subunits and critical habitat units.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 97 percent of the area of OCR–6 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

Unit 3: Redwood Coast (RWC)

Unit 3 contains 180,855ac (73,189ha) and three subunits. This unit consists of the Northern California Coast Ecological Section 263, based on section descriptions of forest types from Ecological Subregions of the United States (McNab and Avers 1994b, entire). This region is characterized by low-lying terrain (0 to 2,950 ft (0 to 900 m)) with a maritime climate, generally mesic conditions, and moderate temperatures. Climatic conditions are rarely limiting to northern spotted owls at all elevations. Forest communities are dominated by redwood, Douglas-fir-tanoak forest, coast live oak, and tanoak series. The vast majority of the region is in private ownership, dominated by a few large industrial timberland holdings. The results of numerous studies of northern spotted owl habitat relationships suggest stump-sprouting and rapid growth rates of redwoods, combined with high availability of woodrats in patchy, intensively managed forests, enables northern spotted owls to maintain high densities in a wide range of habitat conditions within the Redwood zone.

Subunit Descriptions—Unit 3

RDC–1. This subunit contains 63,127 ac (25,547 ha) of lands managed by the USFS and BLM in Curry County, Oregon and in Del Norte, Humboldt, and Trinity Counties, California. Special management considerations or protection are required in this subunit to address threats from the barred owl. Suitable habitat within the subunit is relatively contiguous north-to-south, and is capable of supporting a sustainable subpopulation of owls. We expect that this subunit will provide strong connectivity among the adjacent critical habitat units to the north (OCR) and east (KLW, ICC). The subunit is weakly connected to the adjacent subunit to the south (RDC–2).

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 78 percent of the area of RDC–1 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

RDC–2. This subunit contains 65,391 ac (26,463 ha) in Mendocino and southwestern Humboldt Counties, California. There are 16,479 ac (6,669 ha) of Federal lands in the subunit, managed by the Bureau of Land Management. The California Department of Forestry and Fire Protection operates the Jackson Demonstration State Forest (48,912 ac (19,794 ha)) for multiple uses including timber production, water quality, wildlife habitat, and research.

Special management considerations or protection are required in this subunit to address threats from the barred owl. Suitable habitat within the subunit is relatively contiguous north-to-south, and is capable of supporting a sustainable subpopulation of owls. The subunit is weakly connected to the adjacent CHU to the east (ICC) and to the coastal subunit to the north (RDC–1); it is relatively well connected to the coastal subunit to the south (RDC–3).

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 85 percent of the area of RDC–2 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

RDC–3. This subunit was comprised entirely of private lands, which have been excluded from the final rule.

RDC–4. This subunit was comprised entirely of private lands, which have been excluded from the final rule.

RDC–5. This subunit contains 20,684 ac (8,371 ha) in southern Marin County, California and represents the southern range limit of the subspecies. No private lands are contained in this subunit. The Mount Tamalpais Watershed (18,900 ac (7,649 ha)) of the Marin Municipal Water District is included in the final critical habitat designation. Six Open Space Preserves (OSPs) in the Marin County Parks and Open Space System, totaling 3,627 ac (1,468 ha), are included in the final critical habitat designation, including Gary Giacomini, White Hill, Cascade Canyon, Baltimore Canyon, Camino Alto, and Blithedale Summit OSPs. Special management considerations or protection are required in this subunit to address

incipient threats from the barred owl. Suitable habitat within the subunit is continuous from east to west. It is unknown whether this subunit is capable of supporting a self-sustaining subpopulation of owls without support from the subunit to the north (RDC–4). The lands between this subunit and the nearest subunit to the east (ICC–6) are dominated by agricultural and urban land use, and are very weakly connected.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 82 percent of the area of RDC–5 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

Unit 4: West Cascades North (WCN)

This unit contains 542,274 ac (219,450 ha) and two subunits. This unit coincides with the northern Western Cascades Section M242B, based on section descriptions of forest types from Ecological Subregions of the United States (McNab and Avers 1994a, Section M242B), combined with the western portion of M242D (Northern Cascades Section), extending from the U.S.-Canadian border south to Snoqualmie Pass in central Washington. It is similar to the Northern Cascades Province of Franklin and Dyrness (1988, pp. 17–20). This region is characterized by high mountainous terrain with extensive areas of glaciers and snowfields at higher elevation. The marine climate brings high precipitation (both annual and summer) but is modified by high elevations and low temperatures over much of this modeling region. The resulting distribution of forest vegetation is dominated by subalpine species, mountain hemlock and silver fir; the western hemlock and Douglas-fir forests typically used by northern spotted owls are more limited to lower elevations and river valleys (northern spotted owls are rarely found at elevations greater than 4,200 ft (1,280 m) in this region) grading into the mesic Puget lowland to the west.

Subunit Descriptions—Unit 4

WCN–1. The WCN–1 subunit consists of approximately 438,255 ac (177,355 ha) in Whatcom, Skagit, and Snohomish Counties, Washington, and comprises lands managed by the USFS and the State of Washington. The USFS manages 320,146 ac (129,559 ha) as Late-successional Reserves to maintain functional, interactive, late-successional, and old-growth forest ecosystems and 6,147 ac (2,487 ha) under the matrix land use allocation where multiple uses occur, including most timber harvest and other silvicultural activities. Threats in this subunit include current and past timber harvest, competition with barred owls, steep topography with high-elevation ridges that separate relatively small, linear strips of suitable habitat in valley bottoms, and location at the northern limit of the subspecies range. This subunit is expected to function primarily for demographic support of the overall population and to maintain the subspecies distribution in the northernmost portion of its range. WCN–1 is located in the watersheds of the Stillaguamish, Skagit, and Nooksack rivers, and is bounded on the north by the international boundary with British Columbia, Canada. In this subunit, we have excluded lands covered under the Washington Department of Natural Resources State Lands HCP.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 92 percent of the area of WCN–1 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

WCN–2. The WCN–2 subunit consists of approximately 103,988 ac (42,083 ha) in King and Snohomish Counties, Washington, and comprises lands managed by the USFS, State of Washington, and private landowners. The USFS manages 82,316 ac (33,312 ha) as Late-successional Reserves to maintain functional, interactive, late-successional, and old-growth forest ecosystems and 834 ac (338 ha) under the matrix land use allocation where multiple uses occur, including most timber harvest and other silvicultural activities. Threats in this subunit include current and past timber harvest, competition with barred owls, and steep topography with high-elevation ridges that separate relatively small, linear strips of suitable habitat in valley bottoms. This subunit has a key role in maintaining connectivity between northern spotted owl populations, both north to south in the West Cascades and west to east between the West and East Cascades units. This role is shared with the WCC–1 subunit to the south and the ECN–4 subunit to the east. This subunit is also expected to provide demographic support of the overall population. WCN–2 is located in the watersheds of the Snohomish and Cedar/Sammamish Rivers. In this subunit, we have excluded lands covered under the Washington Department of Natural Resources State Lands HCP in the final designation.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 79 percent of the area of WCN–2 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long

term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

Unit 5: West Cascades Central (WCC)

This unit contains 909,687 ac (368,136 ha) and three subunits. This region consists of the midsection of the Western Cascades Section M242B, based on section descriptions of forest types from Ecological Subregions of the United States (McNab and Avers 1994a, Section M242B), extending from Snoqualmie Pass in central Washington south to the Columbia River. It is similar to the Southern Washington Cascades Province of Franklin and Dyrness (1988, pp. 21–23). We separated this region from the northern section based on differences in northern spotted owl habitat due to relatively milder temperatures, lower elevations, and greater proportion of western hemlock/Douglas-fir forest and occurrence of noble fir (*A. procera*) to the south of Snoqualmie Pass. Because Douglas-fir dwarf mistletoe occurs rarely in this region, northern spotted owl nest sites are largely limited to defects in large trees, and occasionally nests of other raptors.

Subunit Descriptions—Unit 5

WCC–1. The WCC–1 subunit consists of approximately 225,847 ac (91,397 ha) in King, Pierce, Thurston, Lewis, Kittitas, and Yakima Counties, Washington, and comprises lands managed by USFS and State of Washington. The USFS manages 183,884 ac (76,843 ha) as Late-successional Reserves to maintain functional, interactive, late-successional, and old-growth forest ecosystems and 35,145 ac (14,222 ha) under the matrix land use allocation where multiple uses occur, including most timber harvest and other silvicultural activities. Threats in this subunit include current and past timber harvest, competition with barred owls, and stand conversion. This subunit is expected to provide demographic support of the overall population and to maintain demographic connectivity between the Cascade Range and the Olympic Peninsula in conjunction with subunit NCO–3. WCC–1 is located primarily in the watersheds of the Nisqually, Puyallup, White, Duwamish, and Green Rivers. In this subunit, we have excluded lands from our final critical habitat designation that are covered under the Washington Department of Natural Resources State Lands HCP, the Cedar River Watershed HCP, the Plum Creek Timber Central Cascades HCP, the West Fork Timber HCP, the Tacoma Water Green River Water Supply Operations and Watershed Protection HCP as well as other private lands from the final designation.

Our evaluation of sites known to be occupied at the time of listing indicate that approximately 96 percent of the area of WCC–1 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

WCC–2. The WCC–2 subunit consists of approximately 279,445 ac (113,087 ha) in Pierce, Lewis, Cowlitz, Skamania, and Yakima Counties, Washington, and comprises lands managed by USFS, State of Washington, and private landowners. The USFS manages 92,835 ac (37,569 ha) as Late-successional Reserves to maintain functional, interactive, late-successional, and old-growth forest ecosystems and 88,655 ac (35,878 ha) under the matrix land use allocation where multiple uses occur, including most timber harvest and other silvicultural activities. Threats in this subunit include current and past timber harvest and competition with barred owls. This subunit is expected to provide demographic support of the overall population. WCC–2 is located primarily in the Cowlitz River watersheds west of the Cascade Crest and the headwaters of the Naches River watershed east of the Crest. In this subunit, we have excluded lands covered under the Washington Department of Natural Resources State Lands HCP, the West Fork Timber HCP, and the Port Blakely Tree Farms L.P. (Morton Block) SHA, Landowner Option Plan, and Cooperative Habitat Enhancement Agreement in the final critical habitat designation.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 96 percent of the area of WCC–2 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

WCC–3. The WCC–3 subunit consists of approximately 394,501 ac (159,649 ha) in Clark, Skamania, and Yakima Counties, Washington, and comprises lands managed by the USFS, the State of Washington, and private landowners. The USFS manages 242,929 ac (98,310 ha) as Late-successional Reserves to maintain functional, interactive, late-successional, and old-growth forest ecosystems and 122,641 ac (49,631 ha) under the matrix land use allocation where multiple uses occur, including most timber harvest and other silvicultural activities. Threats in this subunit include current and past timber harvest, competition with barred owls, and the Columbia River as an impediment to northern spotted owl dispersal. This subunit is expected to provide demographic support of the overall population and an opportunity for demographic exchange between the WCC Unit and the WCS Unit. WCC–3 is located primarily in the watersheds of the Lewis, Wind, and White Salmon Rivers, and is bounded on the south by the Columbia River. In this subunit, we have excluded lands covered under the Washington Department of Natural Resources State Lands HCP from critical habitat designation.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 96 percent of the area of WCC–3 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and

occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

Unit 6: West Cascades South (WCS)

Unit 6 contains 1,355,198ac (548,429 ha) and contains six subunits. This unit consists of the southern portion of the Western Cascades Section M242B, based on section descriptions of forest types from Ecological Subregions of the United States (McNab and Avers 1994a, Section M242B), and extends from the Columbia River south to the North Umpqua River. We separated this region from the northern section due to its relatively milder temperatures, reduced summer precipitation due to the influence of the Willamette Valley to the west, lower elevations, and greater proportion of western hemlock/Douglas-fir forest. The southern portion of this region exhibits a gradient between Douglas-fir/western hemlock and increasing Klamath-like vegetation (mixed conifer/evergreen hardwoods), which continues across the Umpqua divide area. The southern boundary of this region is novel and reflects a transition to mixed-conifer forest (Franklin and Dyrness 1988, pp. 23–24, 137–143). The importance of Douglas-fir dwarf mistletoe increases to the south in this region, but most northern spotted owl nest sites are found in defective large trees, and occasionally nests of other raptors.

Subunit Descriptions—Unit 6

WCS–1. The WCS–1 subunit consists of approximately 92,586 ac (37,468 ha) in Multnomah, Hood River, and Clackamas Counties, Oregon, and comprises only Federal lands managed by the BLM and the USFS under the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats from current and past timber harvest and competition with barred owls. This subunit is expected to function primarily for demographic support to the overall population, as well as north-south and east-west connectivity between subunits and critical habitat units.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 88 percent of the area of WCS–1 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

WCS–2. The WCS–2 subunit consists of approximately 150,105 ac (60,745 ha) in Clackamas, Marion, and Wasco Counties, Oregon, and comprises only Federal lands managed by the BLM and the USFS under the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats from current and past timber harvest and competition with barred owls. This subunit is expected to function primarily for demographic support to the overall population, as well as north-south connectivity between subunits.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 82 percent of the area of WCS–2 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011 p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

WCS–3. The WCS–3 subunit consists of approximately 319,736 ac (129,393 ha) in Clackamas, Marion, Linn, and Lane Counties, Oregon, and comprises lands managed by the State of Oregon, the BLM, and the USFS. Of this subunit, 184 ac (75 ha) are managed by the State of Oregon primarily for recreation (Oregon Administrative Rules, Chapter 736, entire). The remaining 319,552 ac (129,318 ha) are Federal lands managed as directed by the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats from current and past timber harvest and competition with barred owls. This subunit is expected to function primarily for demographic support to the overall population, as well as north-south connectivity between subunits.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 85 percent of the area of WCS–3 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

WCS–4. The WCS–4 subunit consists of approximately 379,130 ac (153,429 ha) in Lane and Douglas Counties,

Oregon, and comprises only Federal lands managed by the BLM and the USFS under the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats from current and past timber harvest and competition with barred owls. This subunit is expected to function primarily for demographic support to the overall population, as well as north-south connectivity between subunits.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 86 percent of the area of WCS–4 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

WCS–5. The WCS–5 subunit consists of approximately 356,415 ac (144,236 ha) in Lane and Douglas Counties, Oregon, and comprises only Federal lands managed by the USFS under the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats from current and past timber harvest and competition with barred owls. This subunit is expected to function primarily for demographic support to the overall population, as well as north-south and east-west connectivity between subunits and critical habitat units.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 83 percent of the area of WCS–5 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

WCS–6. The WCS–6 subunit consists of approximately 99,558 ac (40,290 ha) in Lane, Klamath, and Douglas Counties, Oregon, and is managed by the BLM and the USFS as directed by the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats from current and past timber harvest and competition with barred owls. This subunit is expected to function primarily for east-west connectivity between subunits and critical habitat units, and between the Oregon coast and the western Cascades.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 97 percent of the area of WCS–6 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

Unit 7: East Cascades North (ECN)

Unit 7 contains 1,345,523ac (557,002 ha) and nine subunits. This unit consists of the eastern slopes of the Cascade range, extending from the Canadian border south to the Deschutes National Forest near Bend, OR. Terrain in portions of this region is glaciated and steeply dissected. This region is characterized by a continental climate (cold, snowy winters and dry summers). High-frequency, low-intensity fire regimes occur at lower elevations, mid elevations have mixed-severity regimes, and high elevations have high-severity regimes. Increased precipitation from marine air passing east through Snoqualmie Pass and the Columbia River has resulted in an increase of moist forest conditions in this region (Hessburg *et al.* 2000b, p. 165). In Washington, ponderosa pine and Douglas-fir forest are dominant at low elevations, Douglas-fir/grand fir mixed-conifer forest are characteristic of mid-elevations, and higher elevations support forests of silver fir, hemlock, and subalpine fir. The terrain is highly dissected and mountainous. The terrain and ecology are different on the southern portion of the unit, where ponderosa pine predominates on flat terrain at low elevations, and owl habitat is restricted to buttes and the slopes of the Cascade Range in forests of Douglas-fir, grand/white fir, and true firs. There is substantially less habitat in the Deschutes area of Oregon compared to the area north of Sisters, Oregon, and into Washington. The bulk of owls in this Unit are in Washington.

Forest composition, particularly the presence of grand fir and western larch, distinguishes this modeling region from the southern section of the eastern Cascades. While ponderosa pine forest dominates lower and middle elevations in both this and the southern section, the northern section supports grand fir and Douglas-fir habitat at middle elevations. Dwarf mistletoe provides an important component of nesting habitat, enabling northern spotted owls to nest within stands of relatively younger and smaller trees.

Subunit Descriptions—Unit 7

ECN–1. The ECN–1 subunit consists of approximately 101,661 ac (41,141 ha) in Whatcom, Skagit, and Okanogan Counties, Washington, and comprises lands managed by USFS. The USFS manages 60,173 ac (24,351 ha) as Late-successional Reserves to maintain functional, interactive, late-successional and old-growth forest ecosystems and 22,802 ac (9,228 ha) under the matrix land use allocation where multiple uses

occur, including most timber harvest and other silvicultural activities. Threats in this subunit include current and past timber harvest; competition with barred owls; removal or modification of habitat by forest fires, insects, and diseases; steep topography with high-elevation ridges that separate relatively small, linear strips of suitable habitat in valley bottoms; and location at the northeastern limit of the range of the subspecies. This subunit is expected to provide demographic support of the overall population and maintain the subspecies distribution in the northeastern portion of its range. ECN–1 is located primarily in the watershed of the Methow River and includes a small portion of the upper Skagit River watershed. It is bounded on the north by the international boundary with British Columbia, Canada.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 41 percent of the area of ECN–1 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

ECN–2. The ECN–2 subunit consists of approximately 60,128 ac (24,333 ha) in Chelan County, Washington, and comprises lands managed by USFS. The USFS manages 35,835 ac (14,502 ha) as Late-successional Reserves to maintain functional, interactive, late-successional and old-growth forest ecosystems and 17,545 ac (7,100 ha) under the matrix land use allocation where multiple uses occur, including most timber harvest and other silvicultural activities. Threats in this subunit include current and past timber harvest; competition with barred owls; steep topography with high-elevation ridges that separate relatively small, linear strips of suitable habitat in valley bottoms; the combination of Lake Chelan and the Sawtooth Mountains acting as a barrier to dispersal; and removal or modification of habitat by forest fires, insects, and diseases. This subunit is expected to provide demographic support of the overall population. ECN–2 is located primarily in the watersheds of the Chelan and Entiat Rivers.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 34 percent of the area of ECN–2 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

ECN–3. The ECN–3 subunit consists of approximately 301,219 ac (121,899 ha) in Chelan County, Washington, and comprises lands managed by the USFS and private landowners. The USFS manages 187,103 ac (75,718 ha) as Late-successional Reserves to maintain functional, interactive, late-successional and old-growth forest ecosystems and 114,117 ac (46,181 ha) under the matrix land use allocation where multiple uses occur, including most timber harvest and other silvicultural activities. Threats in this subunit include current and past timber harvest, competition with barred owls, and removal or modification of habitat by forest fires, insects, and diseases. This subunit is expected to provide demographic support of the overall population. ECN–3 is located primarily in the watershed of the Wenatchee River. In this subunit, we have excluded private lands and lands covered under the Washington Department of Natural Resources State Lands HCP.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 71 percent of the area of ECN–3 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

ECN–4. The ECN–4 subunit consists of approximately 222,818 ac (90,171 ha) in Kittitas County, Washington, and comprises lands managed by the USFS and the State of Washington. The USFS manages 99,641 ac (40,323 ha) as Late-successional Reserves to maintain functional, interactive, late-successional, and old-growth forest ecosystems and 118,676 ac (48,027 ha) under the matrix land use allocation where multiple uses occur, including most timber harvest and other silvicultural activities. The Washington Department of Fish and Wildlife manages 4,498 ac (1,820 ha). Threats in this subunit include current and past timber harvest, competition with barred owls, and removal or modification of habitat by forest fires, insects, and diseases. This subunit is expected to provide demographic support of the overall population. This subunit also has a key role in maintaining connectivity between northern spotted owl populations, both north to south in the East Cascades North Unit and west to east between the West and East Cascades units. This role is shared with the WCN–2 subunit and the WCC–1 subunit to the west. ECN–4 is located primarily in the Upper Yakima River watershed. In this subunit, we have excluded private lands and lands covered under the Washington Department of Natural Resources State Lands HCP and the Plum Creek Timber Central Cascades HCP.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 78 percent of the area of ECN–4 was covered by verified

northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

ECN–5. The ECN–5 subunit consists of approximately 201,108 ac (81,415 ha) in Kittitas and Yakima Counties, Washington, and comprises lands managed by the USFS and the State of Washington. The USFS manages 115,289 ac (46,656 ha) as Late-successional Reserves to maintain functional, interactive, late-successional, and old-growth forest ecosystems and 83,849 ac (33,933 ha) under the matrix land use allocation where multiple uses occur, including most timber harvest and other silvicultural activities. Threats in this subunit include current and past timber harvest, competition with barred owls, and removal or modification of habitat by forest fires, insects, and diseases. This subunit is expected to provide demographic support of the overall population. ECN–5 is located primarily in the watershed of the Naches River. In this subunit, we have excluded from final critical habitat designation lands covered under the Washington Department of Natural Resources State Lands HCP, the Plum Creek Timber Central Cascades HCP, and private lands.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 85 percent of the area of ECN–5 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

ECN–6. The ECN–6 subunit consists of approximately 81,852 ac (33,124 ha) in Skamania, Yakima, and Klickitat Counties, Washington, and comprises lands managed by the USFS and the State of Washington. The USFS manages 32,400 ac (13,112 ha) as Late-successional Reserves to maintain functional, interactive, late-successional, and old-growth forest ecosystems; and 49,452 ac (20,012 ha) under the matrix land use allocation where multiple uses occur, including most timber harvest and other silvicultural activities. Threats in this subunit include current and past timber harvest, competition with barred owls, and the Columbia River as an impediment to northern spotted owl dispersal. This subunit is expected to provide demographic support of the overall population. ECN–6 is located primarily in the watersheds of the Klickitat and White Salmon Rivers, and is bounded on the south by the Columbia River. In this subunit, we have excluded lands covered under the Washington Department of Natural Resources State Lands HCP as well as private lands from the final designation.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 88 percent of the area of ECN–6 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

ECN–7. The ECN–7 subunit consists of approximately 139,983 ac (56,649 ha) in Hood River and Wasco Counties, Oregon, and comprises only Federal lands managed by the USFS under the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats from current and past timber harvest, removal or modification of habitat by forest fires and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function primarily for demographic support to the overall population, as well as north-south and east-west connectivity between subunits and critical habitat units.

Our evaluation of sites known to be occupied at the time of listing indicates that nearly 100 percent of the area of ECN–7 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

ECN–8. The ECN–8 subunit consists of approximately 94,622 ac (38,292 ha) in Jefferson and Deschutes Counties, Oregon, of Federal lands managed by the USFS under the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This

subunit is expected to function primarily for demographic support to the overall population, as well as north-south connectivity between subunits.

Our evaluation of sites known to be occupied at the time of listing indicate that approximately 61 percent of the area of ECN–8 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

ECN–9. The ECN–9 subunit consists of approximately 155,434 ac (62,902 ha) in Deschutes and Klamath Counties, Oregon, and comprises only Federal lands managed by the USFS under the NWFP (USDA and USDI 1994). Special management considerations or protection are required in this subunit to address threats from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function primarily for demographic support to the overall population, as well as north-south connectivity between subunits and critical habitat units.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 45 percent of the area of ECN–9 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

Unit 8: East Cascades South (ECS)

Unit 8 contains 368,381 ac (149,078 ha) and three subunits. This unit incorporates the Southern Cascades Ecological Section M261D, based on section descriptions of forest types from Ecological Subregions of the United States (McNab and Avers 1994c, Section M261D) and the eastern slopes of the Cascades from the Crescent Ranger District of the Deschutes National Forest south to the Shasta area. Topography is gentler and less dissected than the glaciated northern section of the eastern Cascades. A large expanse of recent volcanic soils (pumice region) (Franklin and Dyrness 1988, pp. 25–26), large areas of lodgepole pine, and increasing presence of red fir (*Abies magnifica*) and white fir (and decreasing grand fir) along a south-trending gradient further supported separation of this region from the northern portion of the eastern Cascades. This region is characterized by a continental climate (cold, snowy winters and dry summers) and a high-frequency/low-mixed severity fire regime. Ponderosa pine is a dominant forest type at mid-to-lower elevations, with a narrow band of Douglas-fir and white fir at middle elevations providing the majority of northern spotted owl habitat. Dwarf mistletoe provides an important component of nesting habitat, enabling northern spotted owls to nest within stands of relatively younger, smaller trees.

Subunit Descriptions—Unit 8

ECS–1. The ECS–1 subunit consists of approximately 127,801 ac (51,719 ha) in Klamath, Jackson, and Douglas Counties, Oregon, and comprises lands managed by the BLM and the USFS. Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function primarily for demographic support to the overall population, as well as north-south and east-west connectivity between subunits and critical habitat units. This subunit is adjacent to ECS–2 to the south.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 78 percent of the area of ECS–1 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

ECS–2. The ECS–2 subunit consists of approximately 66,086 ac (26,744 ha) in Klamath and Jackson Counties, Oregon, and Siskiyou County, California, all of which are Federal lands managed by the BLM and USFS per the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function primarily for north-south connectivity between subunits, but also for demographic support in this area of sparse Federal land and sparse high-quality nesting habitat.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 77 percent of the area of ECS–2 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the

time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

ECS–3. The ECS–3 subunit consists of approximately 112,179 ac (45,397 ha) in Siskiyou County, California, all of which are Federal lands managed by the USFS per the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. The function of this subunit is to provide demographic support in this area of sparsely distributed high-quality habitat and Federal land, and to provide for population connectivity between subunits to the north and south.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 69 percent of the area of ECS–3 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider a large part of this subunit to have been occupied at the time of listing. There are some areas of younger forest in this subunit that may have been unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat in this subunit is especially important for providing essential connectivity between currently occupied areas to support the successful dispersal of northern spotted owls, and may also help to buffer northern spotted owls from competition with the barred owl.

Unit 9: Klamath West (KLW)

Unit 9 contains 1,197,389 ac (484,565 ha) and nine subunits. This unit consists of the western portion of the Klamath Mountains Ecological Section M261A, based on section descriptions of forest types from Ecological Subregions of the United States (McNab and Avers 1994c, Section M261A). A long north-south trending system of mountains (particularly South Fork Mountain) creates a rainshadow effect that separates this region from more mesic conditions to the west. This region is characterized by very high climatic and vegetative diversity resulting from steep gradients of elevation, dissected topography, and the influence of marine air (relatively high potential precipitation). These conditions support a highly diverse mix of mesic forest communities such as Pacific Douglas-fir, Douglas-fir tanoak, and mixed evergreen forest interspersed with more xeric forest types. Overall, the distribution of tanoak is a dominant factor distinguishing the Western Klamath Region. Douglas-fir dwarf mistletoe is uncommon and seldom used for nesting platforms by northern spotted owls. The prey base of northern spotted owls within the Western Klamath is diverse, but dominated by woodrats and flying squirrels.

Subunit Descriptions—Unit 9

KLW–1. The KLW–1 subunit consists of approximately 147,326 ac (59,621 ha) in Douglas, Josephine, Curry, and Coos Counties, Oregon, and comprises lands managed by the State of Oregon and the BLM. Of this subunit 7,682 ac (3,109 ha) are managed by the State of Oregon for multiple uses including timber revenue production, recreation, and wildlife habitat according to the Southwest Oregon State Forests Management Plan (ODF 2010b, entire). Federal lands comprise 139,644 ac (56,512 ha) and are managed as directed by the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function for demographic support to the overall population and for north-south and east-west connectivity between subunits and critical habitat units. This subunit sits at the western edge of an important connectivity corridor between coastal Oregon and the western Cascades.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 96 percent of the area of KLW–1was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

KLW–2. The KLW–2 subunit consists of approximately 148,929 ac (60,674 ha) in Josephine, Curry, and Coos Counties, Oregon, and comprises lands managed by the USFS and the BLM as directed by the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function for demographic support to the overall population and for north-south and east-west connectivity between subunits and critical habitat units.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 71 percent of the area of KLW–2 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance

and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

KLW–3. The KLW–3 subunit consists of approximately 143,862 ac (58,219 ha) in Josephine, Curry, and Coos Counties, Oregon, and comprises lands managed by the USFS, the BLM and the State of Oregon. There are 142,982 ac (57,863 ha) of Federal lands managed as directed by the NWFP (USDA and USDI 1994, entire). The 880 ac (356 ha) of State of Oregon lands are managed according to the Southwest Oregon State Forests Management Plan (ODF 2010b, entire). Special management considerations or protection are required in this subunit to address threats from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function for demographic support to the overall population and for north-south connectivity between subunits and critical habitat units.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 88 percent of the area of KLW–3 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

KLW–4. The KLW–4 subunit consists of approximately 158,299 ac (64,061 ha) in Josephine and Jackson Counties, Oregon, and Del Norte and Siskiyou Counties, California, and comprises lands managed by the USFS and the BLM that are managed as directed by the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function for demographic support to the overall population and for north-south and east-west connectivity between subunits and critical habitat units.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 95 percent of the area of KLW–4 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

KLW–5. The KLW–5 subunit consists of approximately 31,085 ac (12,580 ha) in Josephine County, Oregon, and Del Norte and Siskiyou Counties, California, all of which are Federal lands managed by the BLM and USFS per the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function for demographic support.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 98 percent of the area of KLW–5 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and

KLW–6. The KLW–6 subunit consists of approximately 117,545 ac (47,569 ha) in Del Norte, Humboldt, and Siskiyou Counties, California, all of which are Federal lands managed by the USFS as directed by the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function for demographic support.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 91 percent of the area of KLW–6 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and

buffering from competition with the barred owl.

KLW–7. The KLW–7 subunit consists of approximately 255,779 ac (103,510 ha) in Del Norte, Humboldt, and Siskiyou Counties, California, all of which are Federal lands managed by the BLM and USFS as directed by the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats to the essential or physical features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function for demographic support.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 91 percent of the area of KLW–7 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

KLW–8. The KLW–8 subunit consists of approximately 114,287 ac (46,250 ha) in Siskiyou and Trinity Counties, California, all of which are Federal lands managed by the BLM and USFS as directed by the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function for demographic support.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 85 percent of the area of KLW–8 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

KLW–9. The KLW–9 subunit consists of approximately 149,656 ac (60,564 ha) in Humboldt and Trinity Counties, California, all of which are Federal lands managed by the USFS as directed by the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function for demographic support.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 89 percent of the area of KLW–9 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

Unit 10: Klamath East (KLE)

Unit 10 contains 1,052,731ac (426,025ha) and seven subunits. This unit consists of the eastern portion of the Klamath Mountains Ecological Section M261A, based on section descriptions of forest types from Ecological Subregions of the United States (McNab and Avers 1994c, Section M261A), and portions of the Southern Cascades Ecological Section M261D in Oregon. This region is characterized by a Mediterranean climate, greatly reduced influence of marine air, and steep, dissected terrain. Franklin and Dyrness (1988, pp. 137–149) differentiate the mixed-conifer forest occurring on the ''Cascade side of the Klamath from the more mesic mixed evergreen forests on the western portion (Siskiyou Mountains),'' and Kuchler (1977) separates out the eastern Klamath based on increased occurrence of ponderosa pine. The mixed-conifer/evergreen hardwood forest types typical of the Klamath region extend into the southern Cascades in the vicinity of Roseburg and the North Umpqua River, where they grade into the western hemlock forest typical of the Cascades. High summer temperatures and a mosaic of open forest conditions and Oregon white oak (*Quercus garryana*) woodlands act to influence northern spotted owl distribution in this region. Northern spotted owls occur at elevations up to 1,768 m. Dwarf mistletoe provides an important component of nesting habitat, providing additional structure and enabling northern spotted owls to occasionally nest within stands of relatively younger, small trees.

Subunit Descriptions—Unit 10

KLE–1. The KLE–1 subunit consists of approximately 242,338 ac (98,071 ha) in Jackson and Douglas Counties, Oregon, and comprises Federal lands managed by the USFS and the BLM under the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function primarily for demographic support to the overall population, as well as north-south and east-west connectivity between subunits and critical habitat units.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 84 percent of the area of KLE–1 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

KLE–2. The KLE–2 subunit consists of approximately 101,942 ac (41,255 ha) in Josephine and Douglas Counties, Oregon, and comprises Federal lands managed by the USFS and the BLM under the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function primarily for east-west connectivity between subunits and critical habitat units, but also for demographic support. This subunit facilitates northern spotted owl movements between the western Cascades and coastal Oregon and the Klamath Mountains.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 92 percent of the area of KLE–2 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

KLE–3. The KLE–3 subunit consists of approximately 111,410 ac (45,086 ha) in Jackson, Josephine, and Douglas Counties, Oregon, and comprises Federal lands managed by the USFS and the BLM under the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function primarily for east-west connectivity between subunits and critical habitat units, but also for demographic support. This subunit facilitates northern spotted owl movements between the western Cascades and coastal Oregon and the Klamath Mountains.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 97 percent of the area of KLE–3 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

KLE–4. The KLE–4 subunit consists of approximately 254,442 ac (102,969 ha) in Jackson, Klamath, and Douglas Counties, Oregon, and comprises Federal lands managed by the USFS and the BLM under the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function primarily for east-west connectivity between subunits and critical habitat units, but also for demographic support.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 81 percent of the area of KLE–4 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

KLE–5. The KLE–5 subunit consists of approximately 38,283 ac (15,493 ha) in Jackson County, Oregon, and comprises lands managed by the BLM and USFS. The BLM and USFS lands are managed per the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function primarily for north-south connectivity between subunits, but also for demographic support.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 86 percent of the area of KLE–5 was covered by verified

northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

KLE–6. The KLE–6 subunit consists of approximately 167,849 ac (67,926 ha) in Jackson County, Oregon, and Siskiyou County, California, all of which are Federal lands managed by the BLM and USFS per the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function primarily for north-south connectivity between subunits, but also for demographic support.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 97 percent of the area of KLE–6 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

KLE–7. The KLE–7 subunit consists of approximately 66,078 ac (26,741 ha) in Siskiyou County, California, all of which are Federal lands managed by the BLM and USFS per the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function for demographic support and also for connectivity across the landscape.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 96 percent of the area of KLE–7 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

Unit 11: Interior California Coast (ICC)

Unit 11 contains 941,568 ac (381,039 ha) and eight subunits. This unit consists of the Northern California Coast Ranges ecological Section M261B, based on section descriptions of forest types from Ecological Subregions of the United States (McNab and Avers 1994c, Section M261B), and differs markedly from the adjacent redwood coast region. Marine air moderates winter climate, but precipitation is limited by rainshadow effects from steep elevational gradients (328 to 7,847 ft (100 to 2,400 m)) along a series of north-south trending mountain ridges. Due to the influence of the adjacent Central Valley, summer temperatures in the interior portions of this region are among the highest within the northern spotted owl's range. Forest communities tend to be relatively dry mixed-conifer, blue and Oregon white oak, and the Douglas-fir tanoak series. Northern spotted owl habitat within this region is poorly known; there are no Demographic Study Areas (DSAs—areas within forested habitats specifically surveyed to determine northern spotted owl occupation and density), and few studies have been conducted here. Northern spotted owl habitat and occupancy data obtained during this project suggests that some northern spotted owls occupy steep canyons dominated by live oak and Douglas-fir. The distribution of dense conifer habitats most suitable for the northern spotted owl is limited to higher elevations on the Mendocino National Forest.

Subunit Descriptions—Unit 11

ICC–1. The ICC–1 subunit consists of approximately 332,042 ac (134,372 ha) in Humboldt, Trinity, Shasta, and Tehama Counties, California, all of which are Federal lands managed by the BLM and the USFS per the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function primarily for demographic support, but also for connectivity between subunits and critical habitat units.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 97 percent of the area of ICC–1 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern

spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

ICC–2. The ICC–2 subunit consists of approximately 204,400 ac (82,718 ha) in Humboldt and Trinity Counties, California, all of which are Federal lands managed by the BLM and the USFS per the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function primarily for demographic support, but also for connectivity between subunits and critical habitat units.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 98 percent of the area of ICC–2 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

ICC–3. The ICC–3 subunit consists of approximately 103,971 ac (42,035 ha) in Trinity, Tehama, and Mendocino Counties, California, all of which are Federal lands managed by the BLM and the USFS per the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function primarily for demographic support, but also for north-south connectivity between subunits.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 89 percent of the area of ICC–3 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

ICC–4. The ICC–4 subunit consists of approximately 120,997 ac (48,966 ha) in Mendocino, Glenn, and Colusa Counties, California, all of which are Federal lands managed by the BLM and USFS per the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function primarily for demographic support.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 93 percent of the area of ICC–4 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

ICC–5. The ICC–5 subunit consists of approximately 34,957 ac (14,147 ha) in Lake and Mendocino Counties, California, all of which are Federal lands managed by the USFS and BLM per the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function primarily for demographic support, but also for connectivity between subunits and critical habitat units.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 78 percent of the area of ICC–5 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

ICC–6. The ICC–6 subunit consists of approximately 2,072 ac (839 ha) of State and Federal lands in Napa and Sonoma Counties, California.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 90 percent of the

area of ICC–6 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

ICC–7. The ICC–7 subunit consists of approximately 119,742 ac (48,458 ha) in Trinity and Shasta Counties, California, all of which are Federal lands managed by the BLM and USFS per the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function both for demographic support and for east-west connectivity between subunits in an area of sparse Federal ownership.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 73 percent of the area of ICC–7 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

ICC–8. The ICC–8 subunit consists of approximately 83,376 ac (33,742 ha) in Siskiyou and Shasta Counties, California, all of which are Federal lands managed by the BLM and the USFS per the NWFP (USDA and USDI 1994, entire). Special management considerations or protection are required in this subunit to address threats from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function both for demographic support and for connectivity between subunits in an area of sparse Federal ownership.

Our evaluation of sites known to be occupied at the time of listing indicates that approximately 84 percent of the area of ICC–8 was covered by verified northern spotted owl home ranges at the time of listing. When combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for the continued maintenance and recruitment of northern spotted owl habitat (USFWS 2011, p. ix). The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.

IX. Effects of Critical Habitat Designation

Section 7 Consultation

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or determinations of designated critical habitat of such species. Decisions by the Fifth and Ninth Circuit Courts of Appeals have invalidated our regulatory definition of ''destruction or adverse modification'' (50 CFR 402.02) (*Gifford Pinchot Task Force* v. *U.S. Fish and Wildlife Service,* 378 F. 3d 1059 (9th Cir. 2004); *Sierra Club* v. *U.S. Fish and Wildlife Service.,* 245 F.3d 434, 442 (5th Cir. 2001)), and we do not rely on this regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat. Under the statutory provisions of the Act, we determine destruction or adverse modification on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation function or purpose for the species.

If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with the Service. Examples of actions that are subject to the section 7 consultation process are actions on State, Indian, local, or private lands that require a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.*) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat, and actions on State, Indian, local, or private lands that are not federally funded or federally authorized do not require section 7 consultation.

Section 7 consultation results in issuance of:

(1) A concurrence letter for Federal actions that may affect, but are not likely to adversely affect, listed species or critical habitat; or

(2) A biological opinion for Federal actions that may affect, and are likely to adversely affect, listed species or critical habitat.

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species and/or destroy or adversely modify critical habitat, we provide reasonable and prudent alternatives to the project, if any are identifiable, that would avoid the likelihood of jeopardy and/or destruction or adverse modification of critical habitat. We define ''reasonable and prudent alternatives'' (at 50 CFR 402.02) as alternative actions identified during consultation that:

(1) Can be implemented in a manner consistent with the intended purpose of the action,

(2) Can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction,

(3) Are economically and technologically feasible, and

(4) Would, in the Director's opinion, avoid the likelihood of jeopardizing the continued existence of the listed species and/or avoid the likelihood of destroying or adversely modifying critical habitat.

Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate consultation on previously reviewed actions in instances where we have listed a new species or subsequently designated critical habitat that may be affected, and the Federal agency has retained discretionary involvement or control over the action, or the agency's discretionary involvement or control is authorized by law. Consequently, Federal agencies sometimes may need to request reinitiation of consultation with us on actions for which formal consultation has been completed, if those actions with discretionary involvement or control may affect subsequently listed species or designated critical habitat.

Determinations of Adverse Effects and Application of the ''Adverse Modification'' Standard

The key factor involved in the destruction/adverse modification determination for a proposed Federal agency action is whether the affected critical habitat would continue to serve its intended conservation function or purpose for the species with implementation of the proposed action after taking into account any anticipated cumulative effects (USFWS 2004, *in litt.* entire). Activities that may destroy or adversely modify critical habitat are those that alter the physical or biological features to an extent that appreciably reduces the conservation value of critical habitat for the northern spotted owl. As discussed above, the role of critical habitat is to support life-history needs of the species and provide for the conservation of the species.

Section 4(b)(8) of the Act requires us to briefly evaluate and describe, in any proposed or final regulation that designates critical habitat, activities involving a Federal action that may destroy or adversely modify such habitat, or that may be affected by such designation.

Activities that may affect critical habitat, when carried out, funded, or authorized by a Federal agency, should result in consultation for the northern spotted owl under section 7(a)(2) of the Act. In general, there are five possible outcomes in terms of how proposed Federal actions may affect the PCEs or physical or biological features of northern spotted owl critical habitat or essential habitat qualities associated with that critical habitat area: (1) No effect; (2) wholly beneficial effects (e.g., improve habitat condition); (3) both short-term adverse effects and long-term beneficial effects; (4) insignificant or discountable adverse effects; or (5) wholly adverse effects. Actions with no effect on the PCEs and physical or biological features of occupied areas or the essential habitat qualities in unoccupied areas do not require section 7 consultation, although such actions may still require consultation if they have effects on the species itself as a result of its status as a threatened species under the Act. Actions with effects to the PCEs, physical or biological features, or other essential habitat qualities of northern spotted owl critical habitat that are discountable, insignificant, or wholly beneficial would be considered not likely to adversely affect critical habitat, and do not require formal consultation if the Service concurs in writing with that Federal action agency determination. Actions that are likely to adversely affect the physical or biological features or other essential habitat qualities of northern spotted owl critical habitat require formal consultation and the preparation of a Biological Opinion by the Service. The Biological Opinion sets forth the basis for our section 7(a)(2) determination as to whether the proposed Federal action is likely to destroy or adversely modify northern spotted owl critical habitat.

Activities that may destroy or adversely modify critical habitat are those that alter the essential physical or biological features or other essential habitat qualities of the critical habitat to an extent that appreciably reduces the conservation value of the critical habitat for the listed species. As discussed above, the conservation role or value of northern spotted owl critical habitat is to adequately support the life-history needs of the species to the extent that well-distributed and interconnected northern spotted owl nesting populations are likely to persist within properly functioning ecosystems at the critical habitat unit and range-wide scales.

Proposed Federal actions that may affect northern spotted owl critical habitat will trigger the consultation requirements under section 7 of the Act and compliance with the section 7(a)(2) standard described above. The consultation process evaluates the effects of a proposed action to designated critical habitat regardless of the species' presence or absence. For an action that may affect critical habitat, the next step is to determine whether it is likely to adversely affect critical habitat. For example, where a project is designed to reduce fuels such that the effect of wildfires will be reduced, but will also reduce foraging opportunities within treatment areas, established interagency consultation teams should determine whether the proposed project has more than an insignificant impact on the foraging PCEs for northern spotted owls. A localized reduction in foraging habitat within a stand may have such an insignificant impact on foraging PCEs within the stand that a not likely to adversely affect determination is appropriate. Similarly, a hazard tree removal project in a stand with many suitable nest trees may have such a minimal reduction in nesting PCEs of that stand that the effect to nesting habitat is insignificant. In such a case, a ''not likely to adversely affect'' determination would be appropriate.

For actions that are likely to adversely affect critical habitat, the agencies will enter into formal consultation. At this stage of consultation, scale and context are especially important in evaluating the potential effects of forest management on northern spotted owl habitat. The degree to which various forest management activities are likely to affect the capability of the critical habitat to support northern spotted owl nesting, roosting, foraging, or dispersal will vary depending on factors such as the scope and location of the action, and the quantity of the critical habitat affected. In addition, in analyzing whether an action will likely destroy or adversely modify critical habitat, the effects of the action on the factors that were the basis for determining the area to meet the definition of critical habitat should be considered.

In general, we would anticipate that management actions that are consistent with the overall purpose for which a critical habitat unit was designated would not likely destroy or adversely modify critical habitat as those terms are used in the context of section 7(a)(2) of the Act. Such actions include activities whose intent is to restore ecological processes or long-term forest health to

forested landscapes that contain northern spotted owl habitat, such as those actions described in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) and elsewhere in this document. However, each proposed action will be considered on a case-by-case basis.

Section 7 Process Under This Critical Habitat Rule

The Presidential Memo, dated February 28, 2012 (77 FR 12985; March 5, 2012), directed the Service to address six action items in the final revised critical habitat rule for the northern spotted owl. One item in the Memo called for the Service to develop clear direction ''for evaluating logging activity in areas of critical habitat, in accordance with the scientific principles of active forestry management and to the extent permitted by law.'' The following summarizes the evaluation process for logging activities in areas of northern spotted owl critical habitat under section 7 of the Act and its implementing regulations, and our plans for close coordination with the land management agencies to best meet the dual goals of recovering the northern spotted owl and managing our public forest lands for multiple use.

Coordination With Land Management Agencies

The Service is committed to working closely with the U.S. Forest Service and BLM to implement the active management and ecological forestry concepts discussed in the Revised Recovery Plan and this critical habitat rule. Both recommend that land managers use the best science to maintain and restore forest health and resilience in the face of climate change and other challenges.

To meet this goal, we have prioritized the timely review of forestry projects that will be proposed in critical habitat. We have already completed section 7 conference opinions on the proposed rule with the agencies, and have recently held interagency coordination meetings with the section 7 Level 1 staff in Oregon, Washington, and California. In these meetings, we identified ways to streamline the section 7 process to ensure that potential projects can be implemented in a timely manner consistent with northern spotted owl conservation. We are also closely involved in and supportive of the respective Forest Service and BLM landscape-level planning efforts currently underway, and will work with the agencies to incorporate the conservation planning recommended in the Revised Recovery Plan and discussed in this final critical habitat designation.

Finally, appropriate Service staff have been directed that all levels of management and field teams stay fully engaged in this process to ensure these commitments are met.

Determining Whether an Action Is Likely to Adversely Affect Critical Habitat

The 1992 northern spotted owl critical habitat rule (57 FR 1796; January 15, 1992) identified the primary constituent element (PCE) as the fundamental scale of analysis at which the ''evaluation of actions that may affect critical habitat for the northern spotted owl'' should occur. Those elements included nesting, roosting, foraging and dispersal habitats. In the 2008 northern spotted owl critical habitat rule (73 FR 47326; August 13, 2008), the forested stand is identified as the appropriate scale for determining whether an action was likely to adversely affect northern spotted owl critical habitat. The 2012 proposed revised critical habitat rule identified a 500-ac (200-ha) circle as a logical scale for determining the effects of a timber sale to critical habitat because research shows northern spotted owls respond more favorably to an area larger than a single tree when choosing where to live.

However, there are many variables to be considered when determining whether the effects to critical habitat are adverse or not. When making a determination as to whether an action is likely to adversely affect critical habitat, and thus require formal consultation, it is not possible to design a ''one size fits all'' set of rules due to differences in project types, habitat types, and habitat needs across the range of the species (Fontaine and Kennedy 2012, p. 1559). This determination should be conducted at a scale that is relevant to the northern spotted owl life-history functions supplied by the PCEs and affected by the project. We note that this more localized scale differs from that used in determining whether an action will destroy or adversely modify critical habitat, which is made at the scale of the designated critical habitat, as described further below.

Northern spotted owl critical habitat PCE 4 (habitat to support the transience and colonization phases of dispersal) provides a life-history need that functions at a landscape-level scale and should be assessed at a larger scale than the other PCEs. Potential scales of analysis include the local watershed (e.g., fifth-field watershed) or subwatershed (e.g., sixth-field watershed), a dispersal corridor, or a relevant landform. Both PCE 2 (habitat that provides for nesting and roosting) and PCE 3 (habitat that provides for foraging) provide life-history needs that function at a more localized landscape, which should help inform the scale at which the determination of whether an action will likely adversely affect critical habitat should be conducted. We encourage the level one consultation teams to tailor this scale of the effects determination to the localized biology of the life-history needs of the northern spotted owl (such as the stand scale, a 500-ac (200-ha) circle, or other appropriate, localized scale).

If a project produces an effect on critical habitat that is wholly beneficial, insignificant, or discountable, then the project is not likely to adversely affect critical habitat, and consultation would be concluded with a letter of concurrence. Wholly beneficial effects include those that actively promote the development or improve the functionality of critical habitat for the northern spotted owl without causing adverse effects to the PCEs. Such actions might involve variable-density thinning in forest stands that do not currently support nesting, roosting, or foraging habitat for the northern spotted owl, which would speed the development of these types of habitats, while maintaining dispersal habitat function. Thinning or other treatments in young plantations that are specifically designed to accelerate the development of owl habitat, and either are in areas that do not provide dispersal habitat or where the effects to dispersal capability would be insignificant or discountable, would also fall into the ''not likely to adversely affect'' category. While these wholly beneficial actions may affect critical habitat and would, therefore, require consultation under section 7 of the Act, they most likely would be completed via an informal consultation with a determination that they are not likely to adversely affect critical habitat.

Likewise, if the adverse effects of a proposed Federal action on the life-history needs supported by physical or biological features of northern spotted owl critical habitat are expected to be discountable or insignificant, that action would also be considered not likely to adversely affect northern spotted owl critical habitat. In such cases, the section 7 consultation requirements can also be satisfied through the informal concurrence process. Examples of such actions may include: Pre-commercial or commercial thinning that does not delay the development of essential physical or biological features; fuel-reduction treatments that have a negligible effect on northern spotted owl foraging habitat

within the stand; and the removal of hazard trees, where the removal has an insignificant effect on the capability of the stand to provide northern spotted owl nesting opportunities.

Some proposed Federal forest management activities may have short-term adverse effects and long-term beneficial effects on the physical or biological features of northern spotted owl critical habitat. The Revised Recovery Plan for the Northern Spotted Owl recommends that land managers actively manage portions of both moist and dry forests to improve stand conditions and forest resiliency, which should benefit the long-term recovery of the northern spotted owl (USFWS 2011, p. III–11). For example, variable thinning in single-story, uniform forest stands to promote the development of multistory structure and nest trees may result in short-term adverse impacts to the habitat's current capability to support owl dispersal and foraging, but have long-term benefits by creating higher quality habitat that will better support territorial pairs of northern spotted owls. Such activities would have less impact in areas where foraging and dispersal habitat is not limiting, and ideally can be conducted in a manner that minimizes short-term negative impacts. Even though they may have long-term beneficial effects, if they have short-term adverse effects, such actions may adversely affect critical habitat, and would require formal consultation under section 7 of the Act. For efficiency, such actions may be evaluated under section 7 programmatically at the landscape scale (e.g., USFS or BLM District).

Habitat conditions in moist/wet and dry/fire-prone forests within the range of the northern spotted owl vary widely, as do the types of management activities designed to accelerate or enhance the development of northern spotted owl habitat. ''Wet'' and ''dry'' are ends of a spectrum, not distinct categories that adequately describe the full range of forest types within the range of the northern spotted owl. Because these categories are broad, and conditions on the ground are more variable, land managers and cooperators should have the expectation that multiple forest types may be involved, and similar projects in different forest types may not always lead to the same effect determination for purposes of compliance with section 7 of the Act.

To make effects determinations, we recommend generating area-specific maps showing the current habitat condition (such as types of habitat, known nest trees, or other feature) and, using information on the proposed action (such as location, type and intensity of harvest, location of new roads and landings, or other proposed activity effects), produce a post-project habitat map such that the pre- and post-project comparison of the PCEs can be assessed. We also recommend the cooperative development of a spatial and temporal framework for evaluating the impact of both the short- and long-term effects of the proposed activities on the northern spotted owl. Framework examples include a landscape assessment or a checklist of key questions the answers to which will illustrate how the project will impact the northern spotted owl (see Spies *et al.* 2012, p. 11, for an example).

Determining Whether an Action Will Destroy or Adversely Modify Critical Habitat

If the effects of the project have more than an insignificant or discountable impact on the ability of the PCEs to provide life-history functions for the northern spotted owl, then the project is likely to adversely affect northern spotted owl critical habitat, and formal consultation is warranted. For projects that will adversely affect critical habitat, it is the Service's responsibility to conduct an analysis of whether the action is likely to ''destroy or adversely modify critical habitat'' during the formal consultation process. As discussed below, the determination of whether an action is likely to destroy or adversely modify critical habitat is made at the scale of the entire critical habitat network. However, a proposed action that compromises the capability of a subunit or unit to fulfill its intended conservation function or purpose could represent an appreciable reduction in the conservation value of the entire designated critical habitat. Therefore, the biological opinion should describe the relationship between the conservation role of the action area, affected subunits, units, and the entire designated critical habitat. This analysis must incorporate all direct and indirect effects and any cumulative effects from the project within the action area. If, after the formal consultation analysis, it is determined that the proposed project will not destroy or adversely modify critical habitat, then the action can be conducted.

Factors to consider in evaluating whether activities, including timber harvest, are likely to destroy or adversely modify critical habitat pursuant to section 7 include:

- The extent of the proposed action, both its temporal and spatial scale, relative to the critical habitat subunit and unit within which it occurs, and the entire critical habitat network.
- The specific purpose for which the affected subunit was identified and designated as critical habitat.
- The cumulative effects of all completed activities in the critical habitat unit.
- The impact of the proposed action on the ability of the affected critical habitat to continue to support the life-history functions supplied by the PCEs.
- The impact of the proposed action on the subunit's likelihood of serving its intended conservation function or purpose.
- The impact of the proposed action on the unit's likelihood of continuing to contribute to the conservation of the species.
- The overall consistency of the proposed action with the intent of the recovery plan or other landscape-level conservation plans.
- The special importance of project scale and context in evaluating the potential effects of timber harvest to northern spotted owl critical habitat.

The first step is to describe the impacts to critical habitat in the action area with respect to the subunit's intended functions as identified in this rule. For example, if a particular subunit was designated to support northern spotted owl connectivity between subunits, then the loss or impact to connectivity must be assessed. Subunits that are expected to provide demographic support should be assessed for their ability to continue to support northern spotted owl nesting territories in conditions suitable for occupancy by pairs of owls (e.g., amount and location of nesting habitat, proximity of foraging habitat, etc.). The analysis should describe the extent to which the project is expected to prevent, preclude, or significantly impair the ability of that subunit to meet its intended function. The analysis should not incorporate the effect of the proposed action on individual northern spotted owls but, instead, on the life-history functions supplied by the PCEs and the physical biological features. Effects to northern spotted owls should be included in the effects to the species section of a biological opinion, as appropriate.

The analysis in a biological assessment or a biological opinion should include an evaluation of the type, frequency, magnitude, and duration of impacts likely to be caused by the action on the PCEs of the action area, affected subunits and critical habitat units, and an assessment of how those impacts are likely to influence the capability of the affected critical habitat

units to provide for a well-distributed and self-sustaining northern spotted owl population. The analysis in a biological assessment or a biological opinion of cumulative effects on critical habitat should include a similar assessment for any future, non-Federal actions reasonably certain to occur in the action area, and at the level of the affected subunits and critical habitat units.

Consideration of the effects of the action, together with any cumulative effects, will form the basis for the biological opinion's determination as to whether the action will destroy or adversely modify critical habitat. In accordance with Service policy, the adverse modification determination is made at the scale of the entire designated critical habitat, unless the critical habitat rule identifies another basis for the analysis (FWS and NMFS 1998). The adverse modification determination for the northern spotted owl will occur at the scale of the entire designated critical habitat, as described below, with consideration given to the need to conserve viable populations within each of the recovery units identified in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011, Recovery Criterion 2).

It is important to note that although the adverse modification determination is made at the scale of the entire designated critical habitat, a proposed action that compromises the capability of a subunit or unit to fulfill its intended conservation function or purpose could represent an appreciable reduction in the conservation value of the entire designated critical habitat. Therefore, the biological opinion should describe the relationship between the conservation role of the action area, affected subunits, units, and the entire designated critical habitat. In this way, the biological opinion establishes a sensitive analytical framework for informing the determination of whether a proposed action is likely to appreciably reduce the conservation role of critical habitat overall.

The Service has assured the BLM and FS that it is committed to working closely with them to evaluate and implement active management and ecological forestry concepts of the recovery plan and critical habitat rule into potential timber management projects. Both documents recommend that land managers use the best science to maintain and restore forest health and resilience in the face of climate change and other challenges.

To meet this goal we have prioritized the timely review of forestry projects that will be proposed in critical habitat. We have already completed section 7 conference opinions on the proposed rule with several of your units, and we have recently held interagency coordination meetings with the section 7 Level 1 staff in Oregon, Washington, and California. In these meetings, we identified ways to streamline the section 7 process to ensure that potential projects can be implemented in a timely manner consistent with northern spotted owl conservation. We are also closely involved in and supportive of the respective FS and BLM landscape-level planning efforts currently underway and will work with you to incorporate the conservation planning reflected in the revised recovery plan and the final critical habitat designation.

Finally, appropriate Service staff have been directed that all levels of management and field teams—from Level 1 biologists up to the Assistant Regional Director—stay fully engaged in this process to ensure these commitments are met. Any problems or disagreement should be promptly elevated and resolved.

Within dry forests, the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) emphasizes active forest management that could meet overlapping goals of northern spotted owl conservation, climate change response, and restoration of dry forest ecological structure, composition, and process, including wildfire and other disturbances (USFWS 2011, pp. III–20). For the rest of the northern spotted owl's range that is not fire-prone, the Revised Recovery Plan emphasizes habitat management that accelerates the development of future habitat, restores larger habitat blocks, and reduces habitat fragmentation. The following discussion describes the type of management approaches that would be consistent with the Revised Recovery Plan in the West Cascades/Coast Ranges of Oregon and Washington, East Cascades, and the Redwood Coast zones, and in some cases includes consideration of possible corresponding effect determinations for activities implementing these approaches, for the purpose of analyzing effects to critical habitat under section 7 of the Act. The Klamath and Northern California Interior Coast Ranges regions contain conditions similar to the three regions discussed below, and similar management approaches would be consistent with the recovery needs of the owl.

West Cascades/Coast Ranges of Oregon and Washington

The primary goal of the Revised Recovery Plan for this portion of the northern spotted owl's range is to conserve stands that support northern spotted owl occupancy or contain high-value northern spotted owl habitat (USFWS 2011, p. III–17). Silvicultural treatments are generally not needed to accomplish this goal. However, there is a significant amount of younger forest that occurs between and around the older stands, where silvicultural treatments may accelerate the development of these stands into future northern spotted owl nesting habitat, even if doing so temporarily degrades existing dispersal habitat, as is recommended in Recovery Action 6 (USFWS 2011, p. III–19). The Revised Recovery Plan encourages silviculture designed to develop late-successional structural complexity and to promote resilience (USFWS 2011, pp. III–17 to III–19). Restoration or ecological prescriptions can help uniform stands of poor quality develop more quickly into more diverse, higher quality northern spotted owl habitat, and provide resiliency in the face of potential climate change impacts in the future. Targeted vegetation treatments could simultaneously increase canopy and age-class diversity, putting those stands on a more efficient trajectory towards nesting and roosting habitat, while reducing fuel loads. Introducing varying levels of spatial heterogeneity, both vertically and horizontally, into forest ecosystems can contribute to both of the goals stated above.

On matrix lands under the NWFP where land managers have a range of management goals, the Service anticipates that not all forest management projects in critical habitat will be focused on the development or conservation of northern spotted owl habitat. Ideally, proposed actions within critical habitat should occur on relatively small patches of younger, mid-seral forest stands that do not cause reductions in higher quality northern spotted owl habitat. They should also be planned in such a way that their net occurrence on the regional landscape is consistent with broader ecosystem-based planning targets (e.g., Spies *et al.* 2007a, entire) to provide the physical or biological features that are essential to the conservation of the northern spotted owl. Within that context, thinning and targeted variable-retention harvest in moist forests could be considered where the conservation of complex early-seral forest habitat is a management goal. This approach provides a contrast to traditional clearcutting that does not mimic natural disturbance or create viable early-seral communities that grow into high-quality habitat (Dodson *et al.* 2012, p. 353; Franklin *et al.* 2002,

p. 419; Swanson *et al.* 2011, p. 123; Kane *et al.* 2011, pp. 2289–2290; Betts *et al.* 2010, p. 2127, Hagar 2007, pp. 117–118). Swanson (2012, entire) provides a good overview and some management considerations.

In cases where these moist forest treatments in matrix are intended to meet management goals other than northern spotted owl conservation, they can be designed to enable the development of northern spotted owl habitat over time at the landscape scale. If planned well at this scale, these projects may have short-term adverse effects, but are not expected to adversely modify the role and function of critical habitat units. In other words, such treatments can be dispersed across the landscape and over time to both accommodate northern spotted owl habitat needs and conservation of diverse and complex early-seral habitat. Additional information about ecological forestry activities in moist forests can be found in the Revised Recovery Plan under *Northern Spotted Owls and Ecological Forestry* (USFWS 2011, p. III–11) and *Habitat Management in Moist Forests* (USFWS 2011, p. III–17).

East Cascades

The Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) recommends that the dynamic, fire-prone portion of the northern spotted owl's range be actively managed to conserve northern spotted owls, but also address climate change and restore dry forest ecological structure, composition, and processes (*e.g.,* wildfire) to provide for the long-term conservation of the species and its habitat in a dynamic ecosystem (USFWS 2011, pp. III–13, III–20). To do this, management actions should be considered to balance short-term adverse effects with long-term beneficial effects. In some cases, formal consultation on the effects of dry forest management activities on northern spotted owl critical habitat is likely to occur; in other cases, there may be no adverse effects and consultation can be concluded informally.

Management in dry forests should increase the likelihood that northern spotted owl habitat will remain on the landscape longer and develop as part of the dynamic fire- and disturbance-adapted community. Several management approaches can be described for these systems. The first is to maintain adequate northern spotted owl habitat in the near term to allow owls to persist on the landscape in the face of threats from barred owl expansion and habitat alterations from fire and other disturbances. The next is to restore landscapes that are resilient to fire and other disturbances, including those projected to occur with climate change. This will require more than reducing fuels and thinning trees to promote low-severity fires; management will need to develop ''more natural patterns and patch size distributions of forest structure, composition, fuels, and fire regime area'' (Hessburg *et al.* 2007, p. 21).

Our prime objective for vegetation management activities within northern spotted owl critical habitat is to maintain adequate amounts of nesting, roosting, foraging, or dispersal habitat where it currently exists, and to restore degraded habitat where it is essential to the owl and can be best sustained on the landscape, as recommended in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011, Section III). Successfully accomplishing these objectives can be facilitated by spatially and temporally explicit landscape assessments that identify areas valuable for northern spotted owl conservation and recovery, as well as areas important for process restoration (*e.g.,* Prather *et al.* 2008, p. 149; Franklin *et al.* 2008, p. 46; Spies *et al.* 2012, entire). Such assessments could answer questions that are frequently asked about proposed forest management activities, namely ''why here?'' and ''why now?'' Providing well-reasoned responses to these questions becomes especially important when restoration activities degrade or remove existing northern spotted owl habitat. By scaling up conservation and restoration planning from the stand to the landscape level, many apparent conflicts may disappear because management actions can be prioritized and spatially partitioned (Prather *et al.* 2008, p. 149; Rieman *et al.* 2010, p. 464). For example, portions of the landscape can be identified where there may be no conflict between objectives, and where relatively aggressive approaches to ecosystem restoration can occur without placing listed species at substantial risk (Prather *et al.* 2008, pp. 147–149; Gaines *et al.* 2010, pp. 2049–2050). Conflicts between objectives will remain in some locations, such as in places where removing younger, shade-intolerant conifers to reduce competition with larger, legacy conifers may result in a substantial decrease in canopy cover that translates into a reduction in northern spotted owl habitat quality. However, when this sort of treatment is well designed, strategically located, and justified within a landscape approach to treatments, it is easier to assess its effectiveness in meeting both owl conservation and forest restoration needs.

Landscape assessments developed at the scale of entire National Forests, Ranger Districts, or BLM Districts have the broad perspective that can improve ability to estimate effects of management activities on the function of critical habitat and better identify and prioritize treatment areas and the actions that will restore landscapes while conserving northern spotted owl habitat. The Okanogan-Wenatchee National Forest has developed a landscape evaluation process as part of their forest restoration strategy (USDA 2010, pp. 36–52) that can serve as an example for other administrative units when developing their own assessment approaches. We suggest that the value of such assessments in guiding vegetation management within critical habitat can be enhanced by spatially identifying locations where restoration objectives and northern spotted owl habitat objectives converge, are in conflict, or simply are not an issue (see, *e.g.,* Davis *et al.* 2012, entire). We suggest the following approach for the East Cascades:

1. Spatially identify and map:

a. Existing northern spotted owl habitat and northern spotted owl nesting sites.

b. Places on the landscape where northern spotted owl habitat is expected to be retained longer on the landscape in the face of disturbance activities such as fire and insect outbreaks.

c. Places on the landscape where key ecosystem structures and processes are at risk and would benefit from restoration (e.g. legacy trees, unique habitats).

2. Overlay what is known about landscape patterns of vegetation and disturbance processes with items from step 1 above to determine:

a. Stands of high restoration value but low value as existing northern spotted owl habitat.

b. Stands of low restoration value but high value as existing northern spotted owl habitat.

c. Stands of low restoration value and low value as existing northern spotted owl habitat.

d. Stands of high restoration value and high value as existing northern spotted owl habitat.

In locations where there is high restoration value and high value as existing northern spotted owl habitat, a landscape assessment can help to build a strong rationale for impacting owl habitat functionality to achieve broader landscape goals. Conditions that may support management activities in these

stands may include, but are not limited to the following:

1. The patch of habitat is located in an area where it is likely unsustainable and has the potential for conveying natural disturbances across the landscape in ways that jeopardize large patches of suitable northern spotted owl habitat.

2. There are nearby areas that are more likely to sustain suitable northern spotted owl habitat and are either currently habitat or will likely develop suitable conditions within the next 30 years.

3. The patch of habitat does not appear to be associated with a northern spotted owl home range or to promote successful dispersal between existing home ranges.

4. The area will still retain some habitat function after treatment, while still meeting the intended restoration objective. For example, stands that are suitable as foraging habitat may be degraded post treatment but remain foraging habitat after treatment. Or, stands may be downgraded to dispersal habitat as a result of treatment.

We do not expect the desired landscape conditions will be achieved within the next decade or two; a longer time will be required as younger forests develop into northern spotted owl nesting, roosting, and foraging habitat. In the interim, we recommend that land managers consider management actions to protect current habitat, especially where it occurs in larger blocks on areas of the landscape, where it is more likely to be resistant or resilient to fires and other disturbance agents. We also encourage land managers to consider actions to accelerate the restoration of habitat, especially where it is consistent with overall forest restoration and occurs in those portions of the landscape that are less fire prone or are resilient in the face of these disturbances. The careful application of these types of activities is expected to achieve a landscape that is more resilient to future disturbances. As such, we anticipate that projects designed to achieve this goal will need to be of a larger spatial scale as to have a meaningful effect on wildfire behavior, regimes, and extent. The effects of these projects will vary depending on existing condition, prescriptions, proximity of habitat, and other factors. It is likely that such projects may affect northern spotted owl critical habitat and require section 7 consultation.

Some situations also exist in the final critical habitat area where northern spotted owl habitat has been created through fire suppression activities (e.g., meadow conversion, white fir intrusion), but retention of those forested habitat elements is contrary to the overall goals of ecosystem restoration and long-term security for the owl. Restoration projects that modify these elements, while sometimes prudent and recommended (Franklin *et al.* 2008, p. 46), may adversely affect northern spotted owls or their critical habitat, and may need to be evaluated through the section 7 consultation process. Additional information about restoration activities in dry forests can be found in the Revised Recovery Plan for the Northern Spotted Owl under *Restoring Dry Forest Ecosystems* (USFWS 2011, p. III–32).

Redwood Coast

While the Redwood Coast region of coastal northern California is similar to the West Cascades/Coast region in many respects, there are some distinct differences in northern spotted owl habitat use and diet within this zone. The long growing season, combined with the redwood's ability to resprout from stumps, allows redwood stands to attain suitable stand structure for nesting in a relatively short period of time (40 to 60 years) if legacy structures are present. In contrast to the large, contiguous, older stands desired in other wet provinces, some degree of fine-scale fragmentation in redwood forests appears to benefit northern spotted owls. These openings provide habitat for the northern spotted owl's primary prey, the dusky-footed woodrat. High woodrat abundance is associated with dense shrub and hardwood cover that persists for up to 20 years in recent forest openings created by harvesting or burns. Under dense shrub and hardwood cover, woodrats can forage, build nests, and reproduce, relatively secure from owl predation. These sites quickly become overpopulated, and surplus individuals are displaced into adjacent older stands where they become available as owl prey. When developing stands reach an age of around 20 years, understory vegetation is increasingly shaded-out, cover and food sources become scarce, and woodrat abundance declines rapidly. By this time, the stand that once supported a dense woodrat population makes a structural transition into a stand where woodrats are subject to intense owl predation. In northern spotted owl territories within the Redwood Forest zone, active management that creates small openings within foraging habitat can enhance northern spotted owl foraging opportunities and produce or retain habitat suitability in the short term. Actions consistent with this type of land management are not expected to adversely modify critical habitat.

Summary of Section 7 Process

This discussion has covered projects that may or may not require formal section 7 consultation. It is important to distinguish between a finding that a project is likely to adversely affect critical habitat and a finding at the conclusion of formal consultation that a project is likely to destroy or adversely modify critical habitat; these are two very different outcomes. It is not uncommon for a proposed project to be considered likely to adversely affect critical habitat, and thus require formal consultation, but still warrant a conclusion that it will not destroy or adversely modify critical habitat. An action may destroy or adversely modify critical habitat if it adversely affects the essential physical or biological features to an extent that the intended conservation function or purpose of critical habitat for the northern spotted owl is appreciably reduced.

The adverse modification determination is made at the scale of the entire designated critical habitat, unless the final critical habitat rule identifies another basis for that determination, such as at the scale of discrete units and/or groups of units necessary for different life cycle phases, units representing distinctive habitat characteristics or gene pools, or units fulfilling essential geographical distribution requirements of the species (USFWS and NMFS 1998, p. 4–39). In the case of northern spotted owl critical habitat, the adverse modification determination will be made at the scale of the entire designated critical habitat. However, by describing the relationship between the conservation role of affected subunits, units, and the entire designated critical habitat in the biological opinion, a sensitive analytical framework is established for informing the determination of whether a proposed action is likely to appreciably reduce the conservation role of the critical habitat overall. In this way, a proposed action that compromises the capability of a subunit or unit to fulfill its intended conservation function or purpose (e.g., demographic, genetic, or distributional support for northern spotted owl recovery) could represent an appreciable reduction in the conservation value of the entire designated critical habitat. This approach should avoid false no-adverse-modification determinations, when the functionality of a unit or subunit would actually be impaired by a proposed action.

As described above, in general, we do not anticipate that activities consistent with the stated management goals or recommended recovery actions of the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011, Chapters II and III) would constitute adverse modification of critical habitat, even if those activities may have adverse effects in the short term, if the intended result over the long term is an improvement in the function of the habitat to provide for the essential life-history needs of the northern spotted owl. However, such activities will be evaluated under section 7, taking into account the specific proposed action, location, and other site-specific factors.

X. Exemptions

Application of Section 4(a)(3) of the Act

The Sikes Act Improvement Act of 1997 (Sikes Act) (16 U.S.C. 670a) required each military installation that includes land and water suitable for the conservation and management of natural resources to complete an integrated natural resources management plan (INRMP) by November 17, 2001. An INRMP integrates implementation of the military mission of the installation with stewardship of the natural resources found on the base. Each INRMP includes:

(1) An assessment of the ecological needs on the installation, including the need to provide for the conservation of listed species;

(2) A statement of goals and priorities;

(3) A detailed description of management actions to be implemented to provide for these ecological needs; and

(4) A monitoring and adaptive management plan.

Among other things, each INRMP must, to the extent appropriate and applicable, provide for fish and wildlife management; fish and wildlife habitat enhancement or modification; wetland protection, enhancement, and restoration where necessary to support fish and wildlife; and enforcement of applicable natural resource laws.

The National Defense Authorization Act for Fiscal Year 2004 (Pub. L. 108–136) amended the Act to limit areas eligible for designation as critical habitat. Specifically, section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) now provides: ''The Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural resources management plan prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines, in writing, that such plan provides a benefit to the species for which critical habitat is proposed for designation.''

We consult with the military on the development and implementation of INRMPs for installations with listed species. We analyzed INRMPs developed by military installations located within the range of the designated critical habitat designation for the northern spotted owl to determine if they are exempt under section 4(a)(3) of the Act. The following areas are Department of Defense lands with completed, Service-approved INRMPs that fell within the area we proposed as revised critical habitat (77 FR 14062; March 8, 2012).

Approved INRMPs

U.S. Army Joint Base Lewis-McChord

Joint Base Lewis-McChord (JBLM), formerly known as Fort Lewis, is an 86,500-ac (35,000-ha) U.S. Army military reservation in western Washington, south of Tacoma and the Puget Sound. JBLM contains one of the largest remaining intact forest areas in the Puget Sound basin, with approximately 54,400 ac (22,000 ha) of forests and woodlands, predominantly of the dry Douglas-fir forest type and including some moist forest types (Douglas-fir, red cedar, hemlock). The forested area of JBLM is managed by the Base's Forestry Program, and the primary mission for the JBLM Forest is to provide a variety of forested environments for military training. JBLM has a history of applying an ecosystem management strategy to their forests to provide for multiple conservation goals, which have included promoting native biological diversity, maintaining and restoring unique plant communities, and developing late-successional (older) forest structure. There are 14,997 ac (6,069 ha) of lands within the boundary of JBLM that were identified in the proposed critical habitat designation; these lands comprised subunit NCO–3 in the proposed rule (77 FR 14062; March 8, 2012).

JBLM has an INRMP in place that was approved in 2008; JBLM is in the process of updating that INRMP. To date, JBLM has managed their forest lands according to their Forest Management Strategy, first prepared for then-Fort Lewis in 1995 by the Public Forestry Foundation based in Eugene, Oregon, in collaboration with The Nature Conservancy. The Forest Management Strategy was last revised in May 2005, and is also in the process of being updated (Forest Management Strategy 2005, entire). However, in 2012, JBLM amended their existing INRMP with specific regard to the northern spotted owl by completing an Endangered Species Management Plan (ESMP) that includes guidelines for protecting, maintaining, and enhancing habitat essential to support the northern spotted owl on JBLM. The Service has found, in writing, that the amended INRMP provides a net conservation benefit to the species.

The ESMP identifies management objectives for the conservation of the northern spotted owl. Specifically, the ESMP includes three focus areas for management of northern spotted owl. The long-term objective for the first is development of all four types of owl habitat (nesting, roosting, foraging, and dispersal). The long-term objectives for Focus Areas 2 and 3 are development of owl foraging and dispersal habitat. The primary conservation goals for northern spotted owl habitat on JBLM are to protect and maintain existing northern spotted owl suitable habitat; manipulate unsuitable habitat to suitable habitat; and ensure long-term suitable habitat and monitor northern spotted owl habitat to assure that goals are met and actions are successful. Although northern spotted owls are not currently known to occupy JBLM, it is the only significant Federal ownership in this region of Washington, and it provides the largest contiguous block of forest in this area as well. The potential development of suitable owl habitat at JBLM provides one of the only feasible opportunities for establishing connectivity between owl populations in the Olympic Peninsula and the western Cascades Range. Connectivity allows gene flow between populations, and further maintains northern spotted owl distribution and metapopulation dynamics, which are important components of the recovery strategy for the northern spotted owl (USFWS 2011, p. III–1, III–44). The Forest Management Strategy (2005, p. 82) notes that the mosaic of dry forest, woodland, and prairie at JBLM is very different from typical forest landscapes that support northern spotted owls, and that while suitable habitat for dispersal of northern spotted owls can be achieved in the short term, at least 40 to 50 years may be needed to meet the desired condition for foraging, nesting, and roosting habitat.

Based on the above considerations and in accordance with section 4(a)(3)(B)(i) of the Act, we have determined that the identified lands are subject to the JBLM INRMP and that

conservation efforts identified in the INRMP through its ESMP for the northern spotted owl will provide a benefit to the species occurring in habitats within or adjacent to JBLM, including the northern spotted owl. Therefore, lands within this installation are exempt from critical habitat designation under section 4(a)(3) of the Act. We are not including approximately 14,997 ac (6,069 ha) of habitat in this final critical habitat designation as a result of this exemption.

XI. Exclusions

Application of Section 4(b)(2) of the Act

Section 4(b)(2) of the Act states that the Secretary must designate or make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impacts of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. In making that determination, the statute on its face, as well as the legislative history, are clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor.

When considering the benefits of inclusion for an area, we consider the additional regulatory benefits that area would receive from the protection from adverse modification or destruction as a result of actions with a Federal nexus; the educational benefits of mapping essential habitat for recovery of the listed species; and any benefits that may result from a designation due to State or Federal laws that may apply to critical habitat.

When considering the benefits of exclusion, we consider, among other things, whether exclusion of a specific area is likely to result in the overall conservation of the northern spotted owl through the continuation, strengthening, or encouragement of partnerships and the implementation of management plans or programs that provide equal or more conservation for the northern spotted owl than could be achieved through a designation of critical habitat. The Secretary can consider the existence of conservation agreements and other land management plans with Federal, State, private, and tribal entities when making decisions under section 4(b)(2) of the Act. The Secretary may also consider relationships with landowners, voluntary partnerships, and conservation plans, and weigh the implementation and effectiveness of these against that of designation to determine which provides the greatest conservation value to the listed species.

Consideration of relevant impacts of designation or exclusion under section 4(b)(2) may include, but is not limited to, any of the following factors: (1) Whether the plan provides specific information on how it protects the species and the physical or biological features, and whether the plan is at a geographical scope commensurate with the species; (2) whether the plan is complete and will be effective at conserving and protecting the physical or biological features; (3) whether a reasonable expectation exists that conservation management strategies and actions will be implemented, that those responsible for implementing the plan are capable of achieving the objectives, that an implementation schedule exists, and that adequate funding exists; (4) whether the plan provides assurances that the conservation strategies and measures will be effective (i.e., identifies biological goals, has provisions for reporting progress, and is of a duration sufficient to implement the plan); (5) whether the plan has a monitoring program or adaptive management to ensure that the conservation measures are effective; (6) the degree to which the record supports a conclusion that a critical habitat designation would impair the benefits of the plan; (7) the extent of public participation; (8) a demonstrated track record of implementation success; (9) the level of public benefits derived from encouraging collaborative efforts and encouraging private and local conservation efforts; and (10) the effect designation would have on partnerships.

After evaluating the benefits of inclusion and the benefits of exclusion, we carefully weigh the two sides to determine whether the benefits of excluding a particular area outweigh the benefits of its inclusion in critical habitat. If we determine that the benefits of excluding a particular area outweigh the benefits of its inclusion, then the Secretary can exercise his discretion to exclude the area, provided that the exclusion will not result in the extinction of the species.

Under section 4(b)(2) of the Act, we must consider all relevant impacts of the designation of critical habitat, including economic impacts. In addition to economic impacts (discussed in the Economics Analysis section, below), we considered a number of factors in a section 4(b)(2) analysis. We considered whether Federal or private landowners or other public agencies have developed management plans, habitat conservation plans (HCPs) or Safe Harbor Agreements (SHAs) for the area or whether there are conservation partnerships or other conservation benefits that would be encouraged or discouraged by designation of, or exclusion from, critical habitat in an area. We also considered other relevant impacts that might occur because of the designation. To ensure that our final determination is based on the best available information, we also considered comments received on foreseeable economic, national security, or other potential impacts resulting from this designation of critical habitat from governmental, business, or private interests and, in particular, any potential impacts on small businesses.

Based on the information provided by entities seeking exclusion, as well as any additional public comments received, we evaluated whether certain lands in the proposed revised critical habitat were appropriate for exclusion from this final designation pursuant to section 4(b)(2) of the Act. Based on our evaluation, we are excluding approximately 3,879,506 ac (1,567,875 ha) of lands that meet the definition of critical habitat under section 4(b)(2) of the Act from final critical habitat.

Final Economic Analysis

Under section 4(b)(2) of the Act, we consider the economic impacts of specifying any particular area as critical habitat. In order to consider economic impacts, we prepared a draft economic analysis (DEA) of the proposed critical habitat designation and related factors (IEC 2012a). The draft analysis was made available for public review from June 1, 2012, through July 6, 2012 (77 FR 32483). Following the close of the comment period, we developed a final economic analysis (FEA) (IEC 2012b) of the potential economic effects of the designation taking into consideration the public comments and any new information.

The intent of the FEA is to quantify economic impacts that may be directly attributable to the designation of critical habitat—that is, costs above and beyond what are considered ''baseline'' costs, as described below. The economic impact of the final critical habitat designation is analyzed by comparing scenarios both ''with critical habitat'' and ''without critical habitat.'' The ''without critical

habitat'' scenario represents the baseline for the analysis, and considers the costs incurred as a result of protections already in place for the species (e.g., under the Federal listing and other Federal, State, and local regulations); these are costs that are incurred regardless of whether critical habitat is designated. The ''with critical habitat'' scenario describes the ''incremental'' economic impacts associated specifically with the designation of critical habitat for the species—these costs are those not expected to occur but for the designation of critical habitat for the species. In other words, the incremental costs are those attributable solely to the designation of critical habitat above and beyond the baseline costs; these are the costs we consider in the final designation of critical habitat.

The FEA also addresses how potential economic impacts are likely to be distributed, including an assessment of any local or regional impacts of habitat conservation and the potential effects of conservation activities on government agencies, private businesses, and individuals. Decisionmakers can use this information to assess whether the effects of the designation might unduly burden a particular group or economic sector. Finally, the FEA considers those costs that may occur in the 20 years following the revised designation of critical habitat, which was determined to be the appropriate period for analysis because limited planning information was available for most activities to forecast activity levels for projects beyond a 20-year timeframe. The FEA quantifies economic impacts of northern spotted owl conservation efforts associated with timber harvests, wildfire management, barred owl management, road construction, and linear projects (road and bridge construction and maintenance, installation of power transmission lines and utility pipelines), as these are the types of activities we determined were most likely to occur within northern spotted owl habitat.

The results of the FEA concludes that only a portion of the overall proposed revised designation will result in more than incremental, minor administrative costs. Specifically, of the 13,962,449 ac proposed for designation, potential incremental changes in timber harvest practices were anticipated on only 1,449,534 ac (585,612 ha) of USFS and BLM lands, or approximately 10 percent of the proposed designation. In addition, there was potential for the owners of 307,308 ac (123,364 ha) of private land to experience incremental changes in harvests (approximately 2 percent of the proposed designation). No incremental changes in harvests are expected on State lands.

In addition, to address the uncertainty in the types of management and activities that may or may not occur within the proposed critical habitat, the FEA evaluated three scenarios to capture the full range of potential economic impacts of the designation. The first scenario contemplates that minimal or no changes to current timber management practices will occur, thus the incremental costs of the designation would be predominantly administrative. The potential additional administrative costs due to critical habitat designation on Federal lands range from $185,000 to $316,000 on an annualized basis for timber harvest.

The second scenario posits that action agencies may choose to implement management practices that yield an increase in timber harvest relative to the baseline (current realized levels of timber harvest). For this scenario, baseline harvest projections were scaled upward by 10 percent, resulting in a positive impact on Federal lands ranging from $893,000 to $2,870,000 on an annualized basis for timber harvest.

The third scenario considers that actions agencies may choose to be more restrictive in response to critical habitat designation, resulting in a decline in harvest volumes relative to the baseline. To illustrate the potential for this effect, baseline harvest projections were scaled downward by 20 percent, resulting in a negative impact on timber harvest on Federal lands ranging from $2,650,000 to $6,480,000 on an annualized basis.

The USFS and BLM suggested certain alterations to the baseline timber harvest projections, based on differing assumptions regarding northern spotted owl occupancy in matrix lands and projected levels of timber harvest relative to historical yields. The FEA presents the results of a sensitivity analysis considering these alternative assumptions, which widen the range of annualized potential impacts to Federal timber harvest relative to the scenarios described above (IEC 2012b, pp. 4–37 to 4–39). This sensitivity analysis contemplated a situation in which 26.6 percent of northern spotted owl habitat on BLM matrix lands is unoccupied, and a 20 percent increase in baseline timber harvest in USFS Region 6 relative to historical yields. The range of incremental impacts under these alternative assumptions widens to a potential annualized increase of $0.7 million under Scenario 2, and an annualized decrease of $1.4 million under Scenario 3, relative to the results reported above.

Timber harvest was not anticipated to change on State lands in response to critical habitat designation. Timber harvest effects on private lands were highly uncertain, and were only identified qualitatively as potential negative impacts associated with regulatory uncertainty, and possibly (but speculative) new regulation in the State of Washington.

Under all three scenarios, linear projects reflected administrative costs only, ranging from $10,800 to $19,500 on an annualized basis.

Counties receive Federal lands payments from a subset of four programs: The U.S. Forest Service 25% Fund; the BLM O&C lands payments; Payment in Lieu of Taxes (PILT); and Secure Rural Schools and Community Self-determination Act (SRS) (please see FEA pp. 3–19 to 3–21 for a thorough discussion of these programs). Counties have the option of receiving either SRS of 25%/O&C payments, but not both. For reasons unrelated to proposed critical habitat, the future of the PILT and SRS programs is uncertain and depends on forces, including Congressional action, unrelated to critical habitat designation. If funding is not appropriated to PILT, or SRS is not reauthorized, payments from the USFS 25% Fund and the BLM O&C lands become relatively more important. Payments for these latter two programs are based on commercial receipts, main from timber generated on Federal lands; payments from PILT and SRS are not as closely linked to fluctuations in timber sales. In recent years, most counties have opted to receive SRS payments; for example, in FY 2009 all 18 counties in Oregon that contain BLM lands opted to receive SRS payments instead of the LBM O&C lands revenue-sharing payment. Therefore, it is difficult to quantify the effects that future changes in timber harvests from Federal lands resulting from critical habitat designation would have on counties if SRS and PILT payment programs ended and the counties were forced to rely on revenue-sharing payments only. Given the baseline uncertainty associated with the continuance of SRS and PILT payments, we were unable to quantify possible changes in county revenue payments that could result from the critical habitat designation. However, based on recent socioeconomic trends, we were able to identify those counties that may be more sensitive to future changes in timber harvests, industry employment, and Federal land payments. Potential timber harvest changes related to critical habitat designation, whether positive, negative, or neutral, are one potential aspect of

this sensitivity. The counties identified as relatively more sensitive to future changes in timber harvests, employment, and payments were Del Norte and Trinity Counties, California; Douglas and Klamath Counties, Oregon; and Skamania County, Washington.

With regard to jobs, increases or decreases in timber harvests from Federal or private lands could result in positive or negative changes in jobs, respectively. The FEA notes that many factors affect timber industry employment (Chapter 6). The scope of our analysis was limited to the incremental effects of critical habitat within the area proposed for designation by the northern spotted owl. The FEA did not consider potential changes in timber activities outside the proposed critical habitat designation, and did not evaluate the potential effects related to the timber industry as a whole.

Based on our economic analysis of the potential effects of the proposed revised designation of critical habitat for the northern spotted owl, there is a range of potential outcomes, ranging from positive to negative impacts of the designation. Most potential economic impacts would occur, if at all, on Federal matrix lands managed by BLM and the Forest Service, although we note that the amount of Federal matrix lands has been reduced from the proposed rule, as described in Changes from the Proposed Rule, which would have the effect of reducing the range of potential economic impacts presented by the FEA. While there is uncertainty over whether such impacts will occur and to what extent, even assuming higher economic impacts suggested by some commenters, we would not exclude these lands from designation under section 4(b)(2) because a critical habitat designation on these lands will have benefits in conserving this essential habitat. In addition, our evaluation of these matrix lands clearly demonstrates their importance to the conservation of the northern spotted owl; as also discussed in the section Changes from the Proposed Rule, our evaluation of a habitat network with reduced areas of high value habitat on matrix lands indicated a significant increase in extinction risk to the species as a result.

A copy of the FEA with supporting documents may be obtained by contacting the Oregon Fish and Wildlife Office (see **ADDRESSES**) or by downloading from the Internet at *http://www.regulations.gov.*

National Security Impacts

Under section 4(b)(2) of the Act, we consider whether there are lands owned or managed by the Department of Defense (DOD) where a national security impact might exist. In preparing this final rule, we have determined that the only lands within the proposed revised designation of critical habitat for the northern spotted owl that are owned or managed by the Department of Defense have an active INRMP which provides a benefit to the species, and are thus exempt from critical habitat designation under section 4(a)(3) of the Act (see Exemptions, above). We therefore anticipate no impact on national security from this designation. Consequently, the Secretary is not exercising his discretion to exclude any additional areas from this final revised designation based on impacts to national security.

Relevant Impacts

Under section 4(b)(2) of the Act, we consider all relevant impacts, including but not limited to economic impacts and impacts on national security. We consider a number of factors including whether the landowners have developed any HCPs or other management plans for the area, or whether there are conservation partnerships that would be encouraged by designation of, or exclusion from, critical habitat. In addition, we look at any tribal issues, and consider the government-to-government relationship of the United States with tribal entities. We also consider any social impacts that might occur because of the designation.

Here we provide our analysis of areas that were proposed as revised designation of critical habitat for the northern spotted owl, for which there may be a greater conservation benefit to exclude rather than include in the designation. Our weighing of the benefits of inclusion versus exclusion considered all relevant factors in order to make our final determination as to what will result in the greatest conservation benefit to the owl. Depending on the specifics of each situation, there may be cases where the designation of critical habitat will not necessarily provide enhanced protection, and may actually lead to a net loss of conservation benefit.

Benefits of Designating Critical Habitat

The process of designating critical habitat as described in the Act requires that the Service identify those lands within the geographical area occupied by the species at the time of listing on which are found the physical or biological features essential to the conservation of the species that may require special management considerations or protection, and those areas outside the geographical area occupied by the species at the time of listing that are essential for the conservation of the species.

The identification of areas that contain the features essential to the conservation of the species, or are otherwise essential for the conservation of the species if outside the geographical area occupied by the species at the time of listing, is a benefit resulting from the designation. The critical habitat designation process includes peer review and public comment on the identified physical or biological features and areas, and provides a mechanism to educate landowners, State and local governments, and the public regarding the potential conservation value of an area. This helps focus and promote conservation efforts by other parties by clearly delineating areas of high conservation value for the species, and is valuable to land owners and managers in developing conservation management plans by describing the essential physical or biological features and special management actions or protections that are needed for identified areas. Including lands in critical habitat also informs State agencies and local governments about areas that could be conserved under State laws or local ordinances.

However, the prohibition on destruction or adverse modification under section 7(a)(2) of the Act constitutes the only Federal regulatory benefit of critical habitat designation. As discussed above, Federal agencies must consult with the Service on actions that may affect critical habitat and must avoid destroying or adversely modifying critical habitat. Federal agencies must also consult with us on actions that may affect a listed species and refrain from undertaking actions that are likely to jeopardize the continued existence of such species. The analysis of effects to critical habitat is a separate and different analysis from that of the effects to the species. Therefore, the difference in outcomes of these two analyses also represents the regulatory benefit of critical habitat. For some species, and in some locations, the outcome of these analyses will be similar because effects on habitat will often result in effects on the species. However, these two regulatory standards are different. The jeopardy analysis evaluates how a proposed action is likely to influence the likelihood of a species' survival and recovery. The adverse modification analysis evaluates how an action affects the capability of the critical habitat to serve its intended conservation function or purpose (USFWS, in litt. 2004). Although these standards are different,

it has been the Service's experience that in many instances proposed actions that affect both a listed species and its critical habitat and that constitute jeopardy also constitute adverse modification. In some cases, however, application of these different standards results in different section 7(a)(2) determinations, especially in situations where the affected area is mostly or exclusively unoccupied critical habitat. Thus, critical habitat designations may provide greater benefits to the recovery of a species than would listing as endangered or threatened under the Act alone.

There are two limitations to the regulatory effect of critical habitat. First, a section 7(a)(2) consultation is required only where there is a Federal nexus (an action authorized, funded, or carried out by any Federal agency)—if there is no Federal nexus, the critical habitat designation of non-Federal lands itself does not restrict any actions that destroy or adversely modify critical habitat. Aside from the requirement that Federal agencies ensure that their actions are not likely to result in destruction or adverse modification of critical habitat under section 7, the Act does not provide any additional regulatory protection to lands designated as critical habitat.

Second, designating critical habitat does not create a management plan for the areas; does not establish numerical population goals or prescribe specific management actions (inside or outside of critical habitat); and does not have a direct effect on areas not designated as critical habitat. The designation only limits destruction or adverse modification of critical habitat, not all adverse effects. By its nature, the prohibition on adverse modification ensures that the conservation role and function of the critical habitat network is not appreciably reduced as a result of a Federal action.

Once an agency determines that consultation under section 7(a)(2) of the Act is necessary, the process may conclude informally when the Service concurs in writing that the proposed Federal action is not likely to adversely affect the species or critical habitat. However, if we determine through informal consultation that adverse impacts are likely to occur, then formal consultation is initiated. Formal consultation concludes with a biological opinion issued by the Service on whether the proposed Federal action is likely to jeopardize the continued existence of listed species or result in destruction or adverse modification of critical habitat.

For critical habitat, a biological opinion that concludes in a determination of no destruction or adverse modification may recommend additional conservation measures to minimize adverse effects to primary constituent elements, but such measures would be discretionary on the part of the Federal agency.

The designation of critical habitat does not require that any management or recovery actions take place on the lands included in the designation. Even in cases where consultation has been initiated under section 7(a)(2) of the Act because of effects to critical habitat, the end result of consultation is to avoid adverse modification, but not necessarily to manage critical habitat or institute recovery actions on critical habitat. On the other hand, voluntary conservation efforts by landowners can remove or reduce known threats to a species or its habitat by implementing recovery actions. We find that in many instances the regulatory benefit of critical habitat is minimal when compared to the conservation benefit that can be achieved through implementing HCPs under section 10 of the Act, or other voluntary conservation efforts or management plans. The conservation achieved through implementing HCPs, or other habitat management plans can be greater than what we achieve through multiple site-by-site, project-by-project section 7(a)(2) consultations involving project effects to critical habitat. Management plans can commit resources to implement long-term management and protection to particular habitat for at least one and possibly other listed or sensitive species. Section 7(a)(2) consultations commit Federal agencies to preventing adverse modification of critical habitat caused by the particular project; consultation does not require Federal agencies to provide for conservation or long-term benefits to areas not affected by the proposed project. Thus, implementation of any HCP, or management plan that incorporates enhancement or recovery as the management standard may often provide as much or more benefit than a consultation for critical habitat designation. After reviewing all current HCPs, SHAs, and any other active management plans or conservation agreements, and weighing the benefits of inclusion and exclusion (see below), we are excluding all State and private lands covered by such agreements from the final critical habitat designation.

We are also excluding under section 4(b)(2) congressionally-reserved natural areas such as national parks and wilderness areas, State parks, and other private lands that had been proposed for designation, for the reasons discussed below. These analyses are based in large part on the particular conservation requirements of the northern spotted owl or the State laws aimed at protecting this species, and are specific to this designation. Thus, our determination that the benefits of exclusion outweigh the benefits of inclusion in these cases, as well as the decision to exclude in these instances, do not necessarily have a bearing on any future critical habitat designations.

Table 8 identifies all lands excluded from the final rule.

TABLE 8—LANDS EXCLUDED FROM THE FINAL REVISED DESIGNATION OF CRITICAL HABITAT FOR THE NORTHERN SPOTTED OWL UNDER SECTION 4(B)(2) OF THE ACT

Type of agreement	Critical habitat unit	State	Land owner/agency	*Acres*	*Hectares*
Safe Harbor Agreement	WCC	WA	Port Blakely Tree Farms, L.P., Safe Harbor Agreement, Landowner Option Plan, Cooperative Habitat Enhancement.	195	79
	WCC/ECN	WA	SDS Co. & Broughton Lumber Co. Conservation Plan	2,035	824
	RWC	CA	Forster-Gill, Inc	238	96
	RWC	CA	Van Eck Forest Foundation, Safe Harbor Agreement ..	2,774	1,122
Habitat Conservation Plan ..	WCC	WA	Cedar River Watershed Habitat Conservation Plan	3,244	1,313
	WCC	WA	Green River Water Supply Operations and Watershed Protection Habitat Conservation Plan.	3,162	1,280
	WCC/ECN	WA	Plum Creek Timber Central Cascades I–90 Habitat Conservation Plan.	33,144	13,413

TABLE 8—LANDS EXCLUDED FROM THE FINAL REVISED DESIGNATION OF CRITICAL HABITAT FOR THE NORTHERN SPOTTED OWL UNDER SECTION 4(B)(2) OF THE ACT—Continued

Type of agreement	Critical habitat unit	State	Land owner/agency	*Acres*	*Hectares*
	WCC	WA	West Fork Timber Habitat Conservation Plan	5,105	2,066
	RWC	CA	Green Diamond Resource Company Habitat Conservation Plan.	369,384	149,484
	RWC	CA	Humboldt Redwood Company, Habitat Conservation Plan.	208,172	84,244
	RWC	CA	Regli Estate Habitat Conservation Plan	484	196
	ICC	CA	Terra Springs Habitat Conservation Plan	39	16
		WA	Washington Department of Natural Resources State Lands HCP.	225,751	91,358
Other Conservation Measures or Partnerships.	ECN	WA	Scofield Corporation	40	16
	RWC	CA	Mendocino Redwood Company	232,584	94,123
National Parks, State Parks, and Congressionally Reserved Lands.			National Parks	998,585	404,113
			State Parks and Natural Areas	180,894	73,267
			Congressionally Reserved USFS and BLM Lands	1,625,068	657,644
Other Private Lands		WA		42,513	17,204
		CA		123,348	49,917
Total lands excluded under section 4(b)(2) of the Act.				4,056,759	1,641,777

Benefits of Excluding Lands With Safe Harbor Agreements

A Safe Harbor Agreement (SHA) is a voluntary agreement involving private or other non-Federal property owners whose actions contribute to the recovery of listed species. The agreement is between cooperating non-Federal property owners and the Service. In exchange for actions that contribute to the recovery of listed species on non-Federal lands, participating property owners receive formal assurances from the Service that, if they fulfill the conditions of the SHA, the Service will not require any additional or different management activities by the participants without their consent. In addition, at the end of the agreement period, participants may return the enrolled property to the baseline conditions that existed at the beginning of the SHA.

Because many endangered and threatened species occur exclusively, or to a large extent, on privately owned property, the involvement of the private sector in the conservation and recovery of species is crucial. Property owners are often willing partners in efforts to recover listed species. However, some property owners may be reluctant to undertake activities that support or attract listed species on their properties, due to fear of future property-use restrictions related to the Act. To address this concern, an SHA provides that future property-use limitations will not occur without the landowner's consent if the landowner is in compliance with the permit and agreement and the activity is not likely to result in jeopardy to the listed species.

Central to this approach is that the actions taken under the SHA must provide a net conservation benefit that contributes to the recovery of the covered species. Examples of conservation benefits include:

- Reduced habitat fragmentation;
- Maintenance, restoration, or enhancement of existing habitats;
- Increases in habitat connectivity;
- Stabilized or increased numbers or distribution;
- The creation of buffers for protected areas; and
- Opportunities to test and develop new habitat management techniques.

By entering into a SHA, property owners receive assurances that land use restrictions will not be required even if the voluntary actions taken under the agreement attract particular listed species onto enrolled properties or increase the numbers of distribution of those listed species already present on those properties. The assurances are provided through an enhancement of survival permit issued to the property owner, under the authority of section 10(a)(1)(A) of the Act. To implement this provision of the Act, the Service and National Marine Fisheries Service (NMFS) issued a joint policy for developing SHAs for listed species on June 17, 1999 (64 FR 32717). The Service simultaneously issued regulations for implementing SHAs on June 17, 1999 (64 FR 32706). A correction to the final rule was announced on September 30, 1999 (64 FR 52676). The enhancement of survival permit issued in association with an SHA authorizes incidental take of species that may result from actions undertaken by the landowner under the SHA, which could include returning the property to the baseline conditions at the end of the agreement. The permit also specifies that the Service will not require any additional or different management activities by participants without their consent if the permittee is in compliance with the requirements of the permit and the SHA and the permittee's actions are not likely to result in jeopardy.

The benefits of excluding lands with approved SHAs from critical habitat designation may include relieving landowners, communities, and counties of any additional regulatory burden that might be imposed as a result of the critical habitat designation. Even if any additional regulatory burden would be unlikely due to a lack of a Federal nexus, the designation of critical habitat could nonetheless have an unintended negative effect on our relationship with non-Federal landowners, due to the perceived imposition of government regulation. An additional benefit of excluding lands covered by approved SHAs from critical habitat designation is that it may make it easier for us to seek new partnerships with future SHA participants, including States, counties,

local jurisdictions, conservation organizations, and private landowners, in cases where potential partners may be reluctant to encourage the development of habitat that supports endangered or threatened species. In such cases, we may be able to implement conservation actions that we would be unable to accomplish otherwise. By excluding these lands, we may preserve our current partnerships and encourage additional future conservation actions.

In weighing the benefits of inclusion versus the benefits of exclusion for lands subject to approved SHAs, it is important to note that a fundamental requirement of an SHA is an advance determination by the Service that the provisions of the SHA will result in a net conservation benefit to the listed species. Approved SHAs have, therefore, already been determined to provide a net conservation benefit to the listed species; in addition, the management activities provided in an SHA often provide conservation benefits to unlisted sensitive species as well. As described earlier, the designation of critical habitat may not provide any substantial realized conservation benefit to the species on non-Federal lands absent a Federal nexus for an activity. Especially where further Federal action is unlikely, the net conservation benefit provided by the terms of the SHA itself, considered in conjunction with the benefit of excluding lands subject to an SHA by preserving our working relationships with landowners who have entered into SHAs with the Service, and the benefit of laying the positive groundwork for possible future agreements with other landowners, may collectively outweigh the potentially limited benefit that would be realized on these lands from the designation of critical habitat. However, as with all potential exclusions under consideration, lands subject to an SHA will only be excluded if we determine that the benefits of exclusion outweigh the benefits of inclusion following a rigorous examination of the record on a case-by-case basis.

We note that permit issuance in association with SHA applications requires consultation under section 7(a)(2) of the Act, which would include the review of the effects of all SHA-covered activities that might adversely impact the species under a jeopardy standard, including possibly significant habitat modification (see definition of ''harm'' at 50 CFR 17.3), even without the critical habitat designation. In addition, all other Federal actions that may affect the listed species would still require consultation under section 7(a)(2) of the Act, and we would review these actions for possible significant habitat modification in accordance with the definition of harm, described in the *Benefits of Excluding Lands with Habitat Conservation Plans,* below.

We further note that SHAs may include a provision that the landowner may return the area to baseline conditions upon expiration of the permit. The term of the permit is thus an important consideration in weighing the relative benefits of inclusion versus exclusion from the designation of critical habitat. However, the Service has the right to revise a critical habitat designation at any time. Furthermore, the potential benefit of acknowledging the positive conservation contributions of landowners willing to enter into voluntary conservation agreements with the Service for the recovery of endangered or threatened species may nonetheless outweigh the loss of benefit that may be incurred through a possible return to baseline following permit expiration. As stated above, such circumstances require careful consideration on a case-by-case basis in order to make a final determination of the benefits of exclusion or inclusion in a critical habitat designation.

Below is a description of each SHA and our analysis of the benefits of including and excluding it from the critical habitat designation under section 4(b)(2) of the Act.

State of California

Forster-Gill, Inc., Safe Harbor Agreement

In this final designation, the Secretary has exercised his authority to exclude 238 ac (96 ha) of lands from critical habitat, under section 4(b)(2) of the Act, that are covered by the Safe Harbor Agreement (SHA) of Forster-Gill, Inc., within subunit 1 of the Redwood Coast CHU in Humboldt County, California. The enhancement of survival permit associated with this SHA was noticed in the **Federal Register** on March 22, 2002 (67 FR 13357), and issued June 18, 2002. The term of the agreement is 80 years, and the term of the permit is 90 years. The SHA provides for the creation and enhancement of habitat for the northern spotted owl on 238 ac (96 ha) of lands in Humboldt County, California, and provides for continued timber harvest on those lands. There are two baseline conditions that will be maintained under the SHA: (1) Protection of an 11.2-ac (5-ha) no-harvest area that will buffer the most recent active northern spotted owl nest site, but will also be maintained in the absence of a nest site; and (2) maintenance of 216 ac (87 ha) on the property such that the trees will always average 12 to 24 in (30 to 60 cm) dbh with a canopy cover of 60 to 100 percent. At the time of the agreement, forest conditions were on the lower end of the diameter and canopy cover ranges. By the end of the agreement, the property will be at the upper end of the diameter and canopy cover ranges. Under the SHA, Forster-Gill, Inc., agrees to: (1) Annually, survey and monitor for the location and reproductive status of northern spotted owls on the property; (2) protect all active nest sites (locations where nesting behavior is observed during any of the previous 3 years) with a no-harvest area that buffers the nest site by no less than 300 ft (90 m) and limits timber harvest operations within 1,000 ft (305 m) of an active nest site during the breeding season, allowing only the use of existing haul roads; and (3) manage the second-growth redwood timber on the property in a manner that maintains suitable northern spotted owl habitat, while creating, over time, the multilayered canopy structure with an older, larger tree component associated with high-quality northern spotted owl habitat. The SHA is expected to provide, maintain, and enhance for the 80-year life of the agreement over 200 ac (80 ha) of northern spotted owl habitat within a matrix of private timberland. The cumulative impact of the agreement and the timber management activities it covers, which are facilitated by the allowable incidental take, is expected to provide a net benefit to the northern spotted owl.

Benefits of Inclusion—We find there are minimal benefits to including these lands in critical habitat. As discussed above, the designation of critical habitat invokes the provisions of section 7. However, in this case, we find the requirement that Federal agencies consult with us and ensure that their actions are not likely to destroy or adversely modify critical habitat will not result in significant benefits to the species because the possibility of a Federal nexus for a project on these lands that might trigger such consultation is limited (there is little likelihood of an action that will involve Federal funding, authorization, or implementation). In addition, since the lands under the SHA in question are occupied by the northern spotted owl, if a Federal nexus were to occur, section 7 consultation would already be triggered and the Federal agency would consider the effects of its actions on the species through a jeopardy analysis. Because one of the primary threats to the northern spotted owl is habitat loss and degradation, the consultation

process under section 7 of the Act for projects with a Federal nexus will, in evaluating effects to the northern spotted owl, evaluate the effects of the action on the conservation or functionality of the habitat for the species regardless of whether critical habitat is designated for these lands. The analytical requirements to support a jeopardy determination on excluded land are similar, but not identical, to the requirements in an analysis for an adverse modification determination on included land. However, the additional conservation that could be attained through the supplemental adverse modification analysis for critical habitat under section 7 would likely not be significant, and would be triggered only in the event of a Federal action. Furthermore, any such potential benefit would be small in comparison to the benefits derived from the SHA, which already incorporates measures that specifically benefit the northern spotted owl and its habitat, as described above, and remains in place regardless of the designation of critical habitat.

Another benefit of including lands in a critical habitat designation is that it serves to educate landowners, State and local governments, and the public regarding the potential conservation value of an area. This helps focus and promote conservation efforts by other parties by identifying areas of high conservation value for northern spotted owls. Any information about the northern spotted owl and its habitat that reaches a wider audience, including parties engaged in conservation activities, is valuable. However, in this case the landowners are aware of the needs of the species through the development of their SHA, in which they have agreed to take measures to protect the northern spotted owl on their property and create and enhance suitable habitat for the species as well. Any additional educational and information benefits that might arise from critical habitat designation have been largely accomplished through the public review of and comment on the SHA and the associated permit. The release of the Revised Recovery Plan for the Northern Spotted Owl in 2011 was also preceded by outreach efforts and public comment opportunities. In addition, the rulemaking process associated with critical habitat designation included several opportunities for public comment, and we also held multiple public information meetings across the range of the species. Through these outreach opportunities, land owners, State agencies, and local governments have become aware of the current status of and threats to the northern spotted owl, and the conservation actions needed for recovery.

The designation of critical habitat may also indirectly cause State or county jurisdictions to initiate their own additional requirements in areas identified as critical habitat. These measures may include additional permitting requirements or a higher level of local review on proposed projects. However, CALFIRE has indicated to us that it is unlikely to impose any new requirements on project proponents if critical habitat is designated in areas already subject to California Forest Practice Rules. Therefore, we believe this potential benefit of critical will be limited.

Benefits of Exclusion—The benefits of excluding from designated critical habitat the approximately 236 ac (96 ha) of lands currently managed under the SHA are substantial. We have created a close partnership with Forster-Gill through the development of the SHA, which incorporates protections and management objectives for the northern spotted owl and the habitat upon which it depends for breeding, sheltering, and foraging activities, as described above. The conservation approach identified in the Forster-Gill, Inc. SHA, along with our close coordination with the company, addresses the identified threats to northern spotted owl habitat on the covered lands that contain the physical or biological features essential to the conservation of the species.

The conservation measures identified within the SHA seek to achieve conservation goals for northern spotted owls and their habitat, and thus can be of greater conservation benefit than the designation of critical habitat, which does not require specific, proactive management actions. If there is a Federal nexus, consultation under critical habitat requires only that the action agency avoid actions that destroy or adversely modify critical habitat. In contrast, SHA conservation measures that provide a benefit to the northern spotted owl and its habitat have been, and will be, implemented continuously beginning with the enactment of the SHA in 2002 through the 80-year term of the ITP, through 2082, on all covered lands owned and managed by Forster-Gill, Inc. The key conservation measure is a provision that will lead to an approximate doubling of mean tree diameter from roughly 12 to 24 in (30 to 60 cm) on covered lands over the life of the permit, leading to enhancement of habitat suitability.

The designation of critical habitat could have an unintended negative effect on our relationship with non-Federal landowners due to the perceived imposition of redundant government regulation. If lands within the Forster-Gill SHA are designated as critical habitat, it would likely have a chilling effect on our continued ability to seek new partnerships with future participants including States, counties, local jurisdictions, conservation organizations, and private landowners, which together can implement various conservation actions (such as SHAs, HCPs, and other conservation plans, particularly large, regional Conservation Plans that involve numerous participants and/or address landscape-level conservation of species and habitats) that we would be unable to accomplish otherwise.

Excluding the approximately 238 ac (96 ha) owned and managed by Forster-Gill, Inc. from critical habitat designation will sustain and enhance the working relationship between the Service and this private lands partner. The willingness of Forster-Gill to work with the Service to manage federally listed species will continue to reinforce those conservation efforts and our partnership, which contribute toward achieving recovery of the northern spotted owl. We consider this voluntary partnership in conservation vital to our understanding of the status of species on non-Federal lands and necessary to implement recovery actions such as habitat protection and restoration, and beneficial management actions for species. By excluding these lands, we preserve our current conservation partnership with Forster-Gill and encourage additional conservation actions by this partner, and potentially others as well, in the future. We consider the positive effect of excluding proven conservation partners from critical habitat to be a significant benefit of exclusion.

The Benefits of Exclusion Outweigh the Benefits of Inclusion—We reviewed and evaluated the exclusion of approximately 238 ac (96 ha) of land owned and managed by Forster-Gill, Inc. from our designation of critical habitat. The benefits of including these lands in the designation are relatively small. The habitat on the covered lands is already being monitored and managed under the SHA to improve the habitat elements that are equivalent to the physical or biological features that are outlined in this critical habitat rule. The additional designation of critical habitat would provide unnecessarily duplicative protections, and would in any case be unlikely to be triggered under section 7, since there is little probability of a Federal nexus for any

activity on these lands. Even if triggered, since the lands in question are occupied by the species, section 7 consultation would already be required under the jeopardy standard, and as noted, the analysis under the adverse modification standard would be unlikely to provide additional protections beyond those already in place under the SHA. The regulatory benefit of additional Federal review on individual proposed actions is episodic and confined to the scope and scale of the specific actions, whereas implementation of the SHA is continuous and affects the entire property.

Educational benefits are also limited. The landowner is already aware of the conservation needs of the species through development of the SHA. Because there is no public access to the land, we are not aware of any public constituency connected with this ownership which would derive informational benefits from the designation of critical habitat. However, as noted, we have conducted extensive outreach efforts, both in relation to the SHA and its associated permit, as well as our proposed critical habitat, which have provided opportunity for public education and comment on critical habitat for the northern spotted owl. As such, much of the potential educational benefit of critical habitat on these lands has already been accomplished.

On the other hand, the SHA has provisions for protecting and maintaining northern spotted owl habitat that far exceed the conservation benefits that could be obtained through section 7 consultation. These measures will not only prevent the degradation of essential features of the northern spotted owl, but they will maintain or improve these features over time. Furthermore, landowners always have the option not to return to baseline after the term of the SHA is over. Exclusion of these lands from critical habitat will help foster the partnership we have developed with Forster-Gill through the development and continuing implementation of the SHA, and may encourage the landowner to continue these cooperative efforts even after the term of the SHA. In addition, this partnership may serve as a model and aid in fostering future cooperative relationships with other parties in other locations for the benefit of listed species. For these reasons, we have determined that the benefits of exclusion of lands covered by the Forster-Gill, Inc. SHA outweigh the benefits of critical habitat designation.

Exclusion Will Not Result in Extinction of the Species—We have determined that the exclusion of 238 ac (96 ha) from the designation of critical habitat for the northern spotted owl of lands owned and managed by Forster-Gill, Inc., as identified in their SHA will not result in extinction of the species because current conservation efforts under the plan adequately protect the geographical areas containing the physical or biological features essential to the conservation of the species. For projects having a Federal nexus and affecting northern spotted owls in occupied areas, as in this case, the jeopardy standard of section 7 of the Act, coupled with protection provided under the terms of the SHA, would provide assurances that this species will not go extinct as a result of excluding these lands from the critical habitat designation. Based on the above discussion, the Secretary is exercising his discretion under section 4(b)(2) of the Act to exclude from this final critical habitat designation portions of the proposed critical habitat units or subunits that are within the Forster-Gill, Inc. SHA boundary totaling 238 ac (96 ha).

Van Eck Forest Foundation Safe Harbor Agreement

In this final designation, the Secretary has exercised his authority to exclude lands from critical habitat, under section 4(b)(2) of the Act, that are covered by the SHA between the Fred M. Van Eck Forest Foundation and the Service within subunit 1 of the Redwood Coast CHU in California. These lands are also protected under a conservation easement held by the Pacific Forest Trust. The enhancement of survival permit associated with this SHA was noticed in the **Federal Register** on July 8, 2008 (73 FR 39026), and issued August 18, 2008. The term of the permit and the agreement is 90 years. The SHA provides for the creation and enhancement of habitat for the northern spotted owl on 2,774 ac (1,122 ha) of lands in Humboldt County, California, and provides for continued timber harvest on those lands. At the time of the agreement, the lands under consideration supported 1,730 ac (700 ha) of northern spotted owl nesting and roosting habitat and one northern spotted owl activity center (a location where owls are observed nesting or roosting). We anticipate that under the northern spotted owl habitat creation and enhancement timber management regime proposed in the SHA that approximately 1,947 ac (788 ha) of nesting and roosting habitat and potentially up to five northern spotted owl activity centers could exist on the property at the end of 90 years. The SHA does not provide for a return to baseline conditions at the end of the agreement term. Instead, the agreement provides that if more than five northern spotted owl activity centers should become established on the property during the 90-year term, the landowner would be allowed to remove such additional activity centers during the agreement period.

Under the SHA, the Fred M. van Eck Forest Foundation agrees to: (1) Conduct surveys annually to determine the locations and reproductive status of any northern spotted owls; (2) protect up to five activity centers with a no-harvest area that buffers the activity center by no less than 100 ft (30 m); (3) utilize selective timber harvest methods such that suitable nesting habitat is maintained within 300 ft (91 m) of each activity center; (4) limit noise disturbance from timber harvest operations within 1,000 ft (305 m) of an active nest during the breeding season; and (5) manage all second-growth redwood timber on the property in a manner that maintains or creates suitable nesting and roosting habitat over time. The term of the SHA and ITP is 90 years; there is no term limitation on the easement deed held by the Pacific Forest Trust. Specific long-term management targets for second-growth timber are enumerated in the easement deed. All are expressed as propertywide averages; for example, a stocking target of 100,000 board feet (bf) per acre, 75 percent minimum conifer occupancy, 25 percent of standing inventory made up of trees greater than 200 years of age, 15 dominant conifers per acre 36-inches DBH or greater, 4 standing snags per acre 30-inches DBH or greater, 1,600 cubic feet per acre of dead and down logs. The cumulative impact of the SHA and the easement, is expected to provide a substantial net benefit to the northern spotted owl.

Benefits of Inclusion—We find there are minimal benefits to including these lands in critical habitat. As discussed above, the designation of critical habitat invokes the provisions of section 7. However, in this case, we find the requirement that Federal agencies consult with us and ensure that their actions are not likely to destroy or adversely modify critical habitat will not result in significant benefits to the species because the possibility of a Federal nexus for a project on these lands is limited (there is little likelihood of an action that will involve Federal funding, authorization, or implementation). In addition, since the lands under the SHA in question are occupied by the northern spotted owl, if a Federal nexus were to occur, section

7 consultation would already be triggered and the Federal agency would consider the effects of its actions on the species through a jeopardy analysis. Because one of the primary threats to the northern spotted owl is habitat loss and degradation, the consultation process under section 7 of the Act for projects with a Federal nexus will, in evaluating effects to the northern spotted owl, evaluate the effects of the action on the habitat for the species regardless of whether critical habitat is designated for these lands. The analytical requirements to support a jeopardy determination on excluded land are similar, but not identical, to the requirements in an analysis for an adverse modification determination on included land. However, the additional conservation that could be attained through the supplemental adverse modification analysis for critical habitat under section 7 would likely not be significant, and would be triggered only in the event of a Federal action. Furthermore, any such potential benefit would be small in comparison to the benefits already derived from the SHA, which already incorporates measures that specifically benefit the northern spotted owl and its habitat, as described above, and remains in place regardless of the designation of critical habitat.

Another benefit of including lands in a critical habitat designation is that it serves to educate landowners, State and local governments, and the public regarding the potential conservation value of an area. This helps focus and promote conservation efforts by other parties by identifying areas of high conservation value for northern spotted owls. Any information about the northern spotted owl and its habitat that reaches a wider audience, including parties engaged in conservation activities, is valuable. The landowners in this case are aware of the needs of the species through the development of their SHA, in which they have agreed to take measures to protect the northern spotted owl on their property and create and enhance suitable habitat for the species as well. Any additional educational and information benefits that might arise from critical habitat designation have been largely accomplished through the public review of and comment on the SHA and the associated permit. The release of the Revised Recovery Plan for the Northern Spotted Owl in 2011 was also preceded by outreach efforts and public comment opportunities. In addition, the rulemaking process associated with critical habitat designation included several opportunities for public comment, and we also held multiple public information meetings across the range of the species. Through these outreach opportunities, land owners, State agencies, and local governments have become aware of the current status of and threats to the northern spotted owl, and the conservation actions needed for recovery.

The designation of critical habitat may also indirectly cause State or county jurisdictions to initiate their own additional requirements in areas identified as critical habitat. These measures may include additional permitting requirements or a higher level of local review on proposed projects. However, CALFIRE has indicated to us that it is unlikely to impose any new requirements on project proponents if critical habitat is designated in areas already subject to California Forest Practice Rules. Therefore, we believe this potential benefit of critical will be limited.

Benefits of Exclusion—The benefits of excluding from designated critical habitat the approximately 2,774 ac (1,122 ha) of lands currently managed under the SHA are substantial. We have created a close partnership with the Foundation through the development of the SHA, which incorporates protections and management objectives for the northern spotted owl and the habitat upon which it depends for breeding, sheltering, and foraging activities, as described above. The conservation approach identified in the Van Eck Forest Foundation SHA, along with our close coordination with the Foundation, addresses the identified threats to northern spotted owl on covered lands that contain the physical or biological features essential to the conservation of the species.

The SHA conservation measures that provide a benefit to the northern spotted owl and its habitat have been, and will be, implemented continuously beginning with the enactment of the SHA in 2008 through the 90-year term of the ITP, through 2088, on all covered lands owned and managed by the Van Eck Forest Foundation. Such measures include the examples we identified above: A volume-based mean stocking target, mean conifer occupancy, mean percentages of standing inventory in older age classes, mean size and density of dominant conifers, mean size and density of standing snags, and mean volume of dead and down logs. The measures provided in the SHA are aimed at the maintenance and enhancement of suitable nesting and roosting habitat over time to benefit the northern spotted owl.

The designation of critical habitat could have an unintended negative effect on our relationship with non-Federal landowners due to the perceived imposition of redundant government regulation. If lands within the Van Eck Forest Foundation SHA are designated as critical habitat, it would likely have a chilling effect on our continued ability to seek new partnerships with future participants including States, counties, local jurisdictions, conservation organizations, and private landowners, which together can implement various conservation actions (such as SHAs, HCPs, and other conservation plans) that we would be unable to accomplish otherwise. Excluding the approximately 2,774 ac (1,122 ha) owned and managed by the Van Eck Forest Foundation from critical habitat designation will sustain and enhance this working relationship between the Service and the Foundation. The willingness of the Foundation to work with us to manage federally listed species will continue to reinforce those conservation efforts and our partnership, which contribute toward achieving recovery of the northern spotted owl. We consider this voluntary partnership in conservation vital to our understanding of the status of species on non-Federal lands and necessary for us to implement recovery actions, such as habitat protection and restoration, and beneficial management actions for species. Further, this partnership may aid in fostering future cooperative relationships with other parties in other locations for the benefit of listed species. We consider the positive effect of excluding proven conservation partners from critical habitat to be a significant benefit of exclusion.

The Benefits of Exclusion Outweigh the Benefits of Inclusion—We reviewed and evaluated the exclusion of approximately 2,774 ac (1,122 ha) of land owned and managed by the Van Eck Forest Foundation from our designation of critical habitat. The benefits of including these lands in the designation are relatively small, since the habitat on the covered lands is already being monitored and managed under the SHA to improve the habitat elements that are equivalent to the physical or biological features that are outlined in this critical habitat rule. The additional designation of critical habitat would provide unnecessarily duplicative protections, and would in any case be unlikely to be triggered under section 7, since there is little probability of a Federal nexus on these lands. Even if triggered, since the lands

in question are occupied by the species, section 7 consultation would already be required under the jeopardy standard, and, as noted, the analysis under the adverse modification standard would be unlikely to provide additional protections beyond those already in place under the SHA.

Educational benefits are also limited. The landowner is already aware of the conservation needs of the species through development of the SHA. Because the Van Eck lands, for the most part, are not open to the general public, there is no public constituency that would derive informational benefits from the designation of critical habitat. However, as noted, we have conducted extensive outreach efforts, both in relation to the SHA and its associated permit, as well as our proposed revision of critical habitat, which have provided opportunity for public education and comment on critical habitat for the northern spotted owl. As such, much of the potential educational benefit of critical habitat on these lands has already been accomplished.

On the other hand, the conservation measures identified within the SHA seek to achieve conservation goals for northern spotted owls and their habitat, and thus can be of greater conservation benefit than the designation of critical habitat, which does not require specific, proactive actions. Thus, the implementation of the SHA provides a substantially greater benefit to the northern spotted owl than would be obtained through section 7 consultation. The measures provided in the SHA will not only prevent the degradation of essential features for the northern spotted owl, but they are designed to maintain or enhance these features over time. Furthermore, landowners always have the option not to return to baseline after the term of the SHA is over. Exclusion of these lands from critical habitat will help foster the partnership we have developed with the Van Eck Forest Foundation through the development and continuing implementation of the SHA and may encourage the landowner to continue these cooperative efforts even after the term of the SHA. In addition, this partnership may serve as a model and aid in fostering future cooperative relationships with other parties in other locations for the benefit of listed species. For these reasons we have determined that the benefits of exclusion of lands covered by the Van Eck Forest Foundation SHA outweigh the benefits of critical habitat designation.

Exclusion Will Not Result in Extinction of the Species—We have determined that the exclusion of 2,774 ac (1,122 ha) from the designation of critical habitat for the northern spotted owl of lands owned and managed by the Van Eck Forest Foundation, as identified in their SHA will not result in extinction of the species because current conservation efforts under the plan adequately protect the geographical areas containing the physical or biological features essential to the conservation of the species. For projects having a Federal nexus and affecting northern spotted owls in occupied areas, such as in this case, the jeopardy standard of section 7 of the Act, coupled with protection provided under the terms of the SHA and Conservation Easement Agreement, would provide assurances that this species will not go extinct as a result of excluding these lands from the critical habitat designation. Based on the above discussion, the Secretary is exercising his discretion under section 4(b)(2) of the Act to exclude from this final critical habitat designation portions of the proposed critical habitat units or subunits that are within the Van Eck Forest Foundation SHA boundary totaling 2,774 ac (1,122 ha).

State of Washington

Port Blakely Tree Farms L.P. (Morton Block) Safe Harbor Agreement, Landowner Option Plan, and Cooperative Habitat Enhancement Agreement

In this final designation, the Secretary has exercised his authority to exclude lands from critical habitat, under section 4(b)(2) of the Act, totaling approximately 195 ac (79 ha) that are covered under the Port Blakely Tree Farms (also known as Morton Block) SHA in the West Cascades Central CHU in Washington. The enhancement of survival permit associated with this SHA was noticed in the **Federal Register** on December 17, 2008 (73 FR 76680) and issued May 22, 2009. The SHA and permit include both the marbled murrelet (*Brachyramphus marmoratus*) and the northern spotted owl, and covers an area of 45,306 ac (18,335 ha) of managed forest lands known as the ''Morton Block,'' in Lewis and Skamania Counties. The term of the permit and SHA is 60 years.

The covered lands have been intensively managed for timber production and at the time the permit was issued were not known to be occupied by northern spotted owls. The environmental baseline was measured in terms of dispersal habitat. There are no known northern spotted owls nesting on Port Blakely lands. However, northern spotted owls have historically nested on adjacent Federal lands and the 1.82-mile (2.9-km) radius circles around those sites that are used for evaluating potential habitat availability for northern spotted owls extend onto Port Blakely lands. Because of this, Port Blakely Tree Farms conducted habitat evaluations of their properties to determine the amount of suitable northern spotted owl habitat present. The baseline estimate to be provided by the SHA is 8,360 ac (3,383 ha) of northern spotted owl dispersal habitat.

Under the SHA, Port Blakely is implementing conservation measures that are expected to provide net conservation benefits to the northern spotted owl and marbled murrelet. The SHA also provides that Port Blakely will manage their tree farm in a manner that contributes to the goals of the Mineral Block Northern Spotted Owl Special Emphasis Area (SOSEA) according to Washington Forest Practices Rules and Regulations (Washington Forest Practices Board 2002, WAC 222–16–080, WAC 222–16– 086). This area is intended to facilitate dispersal of juvenile northern spotted owls, as well as provide demographic support to core northern spotted owl populations.

Under the SHA, Port Blakely is implementing enhanced forest-management measures that would create potential habitat for the northern spotted owl and marbled murrelet, such as longer harvest rotations, additional thinning to accelerate forest growth, a snag-creation program, retention of more fallen wood than is required by Washington Forest Practices Rules, establishment of special management areas and special set-aside areas, and monitoring. The terms of the agreement are intended to produce conditions that will facilitate the dispersal of the northern spotted owl across the Port Blakely ownership.

At present, there are no known nesting sites for owls in the covered area. However, portions of the covered area are within owl management circles associated with site centers on adjacent ownerships. The majority of the stand-management units are composed of 20- to 60-year-old timber. There are no stands that would provide nesting opportunities for owls in the covered area, and very little young forest marginal habitat is present in the areas of the Morton Block with the potential for utilization by owls that may occur on adjacent ownerships. The young forest marginal habitat known to exist on Port Blakely's ownership is within circles that have greater than 40 percent suitable habitat and, thus, may be

harvested under Washington State Forest Practices Rules.

The SHA landscape-management approach contributes to owl recovery by complementing the existing owl landscape-management strategies on adjacent Federal and State forestlands. The SHA goals and objectives for the northern spotted owl are to provide demographic interchange through dispersal and foraging habitat across their ownership on a dynamic basis, as well as higher-quality habitat in harvest set-asides. These habitats provide for both dispersal and demographic interchange. SOSEA goals are identified in the Washington State Forest Practices Rules and shown on the SOSEA maps (see WAC 222–16–086). SOSEA goals provide for demographic and dispersal support as necessary to complement the northern spotted owl protection strategies on Federal lands within or adjacent to the SOSEA (WAC 222–16–010).

Port Blakely will achieve these goals and objectives both in the near term and over the term of the SHA by immediately protecting special management areas and special set-aside areas of northern spotted owl habitat, and managing commercial forested lands in the plan area on an average rotation length of 60 years. In addition, the SHA provides silvicultural measures to benefit the northern spotted owl, including a thinning program and a snag-retention and creation program.

Port Blakely has agreed to collaborate with State and Federal biologists in research efforts to better understand how their management will influence dispersal habitat conditions in the plan area. Port Blakely is working cooperatively with the Service, WDFW, WDNR, and other entities that have expertise, in designing a statistically robust snag-monitoring study. Port Blakely will also map all leave tree areas, and mark a sample of snag and defective trees for use in snag-monitoring studies. The SHA acknowledges uncertainty in some aspects of anticipated results. Areas of uncertainty include the likelihood that green retention trees will become snags during the period between commercial thinning and future entries, as well as the recruitment success and persistence of snags. Port Blakely has committed to work collaboratively with agencies in these matters. The SHA also contains monitoring and reporting requirements.

Benefits of Inclusion—Critical habitat designation on private lands introduces a higher level of Federal scrutiny under the interagency consultation process in section 7 of the Act. This higher level of scrutiny can arise through two avenues. Under section 7(a)(2) of the Act, Federal agencies that grant funds or issue permits for proposed actions on private lands, whether or not those lands are designated critical habitat, are required to consult with the Service to ensure that the proposed action ''* * * is not likely to jeopardize the continued existence of any endangered species or threatened species * * *'' When lands are designated critical habitat, the section 7(a)(2) consultation requirement is expanded so that the granting or permitting Federal agencies and the Service are required to ensure that the proposed action will not ''* * * result in the destruction or adverse modification of critical habitat * * *'' of any endangered species or threatened species. Critical habitat designation adds a new element to the Federal consultation: The consideration and analysis of adverse effects to habitat that might potentially arise from the proposed action. In evaluating the effects of proposed actions on critical habitat, the Service must be satisfied that the essential physical or biological features of the critical habitat likely will not be altered or destroyed by proposed activities to the extent that the conservation function of the designated critical habitat would be appreciably diminished. Briefly, if the land potentially affected by the proposed action is not designated critical habitat, the scope of the consultation must include a consideration of ''jeopardy'' to threatened or endangered species; but if the same land is designated critical habitat, the consultation must include considerations of both ''jeopardy'' and ''adverse modification'' of critical habitat.

We find that the conservation achieved through implementing these types of agreements is typically greater than would be achieved through multiple site-by-site, project-by-project, section 7 consultations involving consideration of critical habitat. In addition, it is unlikely that Federal projects would be proposed on these relatively remote forest lands unless it was a linear project such as a powerline, pipeline, or transportation project. Due to the scope of such projects, they would likely already have a Federal nexus regardless whether these lands are designated as critical habitat. While the SHA lands may not have nesting sites on them at this time, degradation of the habitats on the SHA or adjacent lands could be considered an adverse effect to the species. Because one of the primary threats to the northern spotted owl is habitat loss and degradation, the consultation process under section 7 of the Act for projects with a Federal nexus likely would, in evaluating effects to the northern spotted owl, evaluate the effects of the action on the conservation or functionality of the habitat for the species, regardless of whether critical habitat is designated for these lands. The analytical requirements to support a jeopardy determination on excluded land are similar, but not identical, to the requirements in an analysis for an adverse modification determination on land designated as critical habitat. However, the amount of conservation that could be attained through the addition of a critical habitat analysis to the section 7 consultation would be relatively low in comparison to the conservation provided by the SHA. The additional benefits of inclusion on the section 7 process are therefore relatively small.

The benefits of inclusion are further minimized because, as mentioned above, the Port Blakely SHA provides for the needs of the northern spotted owl by protecting and preserving landscape levels of suitable northern spotted owl nesting, roosting, and foraging habitat, as well as foraging and dispersal habitat over the term of the SHA in strategic landscapes, and implementing species-specific conservation measures designed to avoid and minimize effects to northern spotted owls. A fundamental requirement of an SHA is a determination by the Service that the provisions of the SHA will result in a net conservation benefit to the listed species. Approved SHAs have, therefore, already been determined to provide a net conservation benefit to the listed species. In addition, monitoring will track SHA progress over the term of the permit and provide feedback on management actions. Therefore, designation of critical habitat would be redundant on these lands, and would not provide additional measureable protections.

Another benefit of including lands in a critical habitat designation is that it serves to educate landowners, State and local governments, and the public regarding the potential conservation value of an area. This helps focus and promote conservation efforts by other parties by identifying areas of high conservation value for northern spotted owls. Designation of critical habitat could inform State agencies and local governments about areas that could be conserved under State laws or local ordinances, such as the Washington State Growth Management Act, which encourage the protection of ''critical areas'' including fish and wildlife habitat conservation areas. However, not

only has the public process for this rulemaking provided information to the landowner, State agencies and local governments and the public about the importance of this area, but the process for approving a SHA, which requires public notice and comment, has served this educational function as well. Through these opportunities, land owners, State agencies, and local governments have become more aware of the status of and threats to listed species, and the conservation actions needed for recovery particularly as it relates to this property. For this reason, we believe that the educational benefits that might accrue from critical habitat designation would be minimal.

Thus, we find that there is minimal benefit from designating critical habitat for the northern spotted owl within the Port Blakely SHA.

Benefits of Exclusion—The benefits of excluding from designated critical habitat the approximately 195 ac (79 ha) of lands currently managed under the SHA are substantial and include maintaining our partnership with this landowner. This is important because it may encourage the company not to return to baseline immediately after expiration of the SHA.

Excluding lands with SHAs from critical habitat designation may also enhance our ability to seek new partnerships with future participants including States, counties, local jurisdictions, conservation organizations, and private landowners, which together can implement conservation actions that we would be unable to accomplish otherwise. If lands within the plan area are designated as critical habitat, it could have a negative effect on our ability to work with various companies to accomplish our goals for the SHA program and recovery of the northern spotted owl. This SHA is located in a key landscape between the Mineral Block and other Federal lands, and represents a unique opportunity to maintain northern spotted owls at the western extreme of the Cascades, which may support dispersal between the Cascades and Olympics. This SHA contributes meaningfully to the recovery of the northern spotted owl and serves as an example to other industrial companies. This SHA was the first to combine a Federal SHA effort with similar planning processes under State jurisdiction and serves as a role model in combining SHA planning with State processes. By excluding these lands, we preserve our current private and local conservation partnerships and encourage additional conservation actions in the future.

Benefits of Exclusion Outweigh the Benefits of Inclusion—In summary, we determine that the benefits of excluding the Port Blakely SHA from the designation of critical habitat for the northern spotted owl outweigh the benefits of including this area in critical habitat. We find that including the Port Blakely SHA would result in minimal, if any, additional benefits to the northern spotted owl, as explained above. We also find that the benefits of including these lands are further minimized by the fact that the management strategies of the Port Blakely SHA are designed to maintain and enhance habitat for the northern spotted owl. The SHA includes species-specific avoidance and minimization measures, monitoring requirements to track success and ensure proper implementation, and forest-management practices and habitat conservation objectives that benefit the northern spotted owl and its habitat, which exceeds any conservation value provided as a result of a critical habitat designation. Furthermore, encouraging landowners to enter into voluntary conservation agreements with the Service for the recovery of endangered or threatened species which we believe would be one of the benefits of exclusion may outweigh the loss of benefit that may be incurred through a possible return to baseline following permit expiration.

Therefore, in consideration of the factors discussed above in the Benefits of Exclusion section, including the relevant impact to current and future partnerships, we have determined that the benefits of exclusion of lands covered by the Port Blakely SHA outweigh the benefits of critical habitat designation.

Exclusion Will Not Result in Extinction of the Species—We have determined that exclusion of a net of approximately 195 ac (79 ha) of lands within the Port Blakely SHA will not result in extinction of the northern spotted owl because current and future conservation efforts under the agreement provide management to facilitate dispersal of juvenile northern spotted owls, as well as provide demographic support to core northern spotted owl populations. Further, should nesting populations of the owl become reestablished in this area (and projects subsequently planned that have a Federal nexus and would potentially affect northern spotted owls), the jeopardy standard of section 7 of the Act, coupled with protection provided by the Port Blakely SHA, would provide a level of assurance that this species will not go extinct as a result of excluding these lands from the critical habitat designation. Based on the above discussion, the Secretary is exercising his discretion under section 4(b)(2) of the Act to exclude from this final critical habitat designation portions of the proposed critical habitat units or subunits that are within the Port Blakely SHA totaling about 195 ac (79 ha).

SDS Company LLC and Broughton Lumber Company Safe Harbor Agreement

In this final designation, the Secretary has exercised his authority to exclude lands from critical habitat, under section 4(b)(2) of the Act, lands totaling about 2,035 ac (824 ha) that are covered under the SDS Lumber Company LLC and its registered business name Stevenson Land Company (together SDS) and Broughton Lumber Company (in total are related companies and are herein known as ''the Companies'') SHA, in Washington and Oregon. (Note the proposed rule contained an error, in which we mistakenly identified approximately 16,031 ac (6,487 ha) of SDS and Broughton lands for potential exclusion). The enhancement of survival permits associated with this SHA were noticed in the **Federal Register** on August 21, 2012 (77 FR 50526) and issued to the Companies on October 26, 2012. The term of each of the permits is 60 years. The Companies collectively manage approximately 83,000 ac (33,589 ha) of forestland in Skamania and Klickitat Counties in Washington, and Hood River and Wasco Counties in Oregon. Much of this ownership is composed of potential habitat outside of any owl circles and, therefore, is currently available for harvest under Washington State Forest Practices Rules. However, 30 northern spotted owl home ranges overlap some portion of the Companies' land base. Most site centers are currently located on Federal or State ownership; only one site center is located on Companies' ownership. Because the Companies have committed to manage their commercial forest lands for a substantially longer rotation than the typical 45-year rotation, and to implement additional conservation measures, northern spotted owls could occupy the covered area in the future under the SHA.

The Companies' landscape management approach contributes to owl recovery by complementing the existing owl landscape-management strategies on adjacent Federal and State forestlands. The Companies' SHA goals and objectives for the northern spotted owl are to provide dispersal and young forest marginal habitat across their

ownership on a dynamic basis, as well as submature and higher quality habitat in harvest set-asides. These habitats provide both dispersal and demographic support, an established goal for lands within the two northern spotted owl special emphasis areas (SOSEAs). SOSEA goals are identified in the Forest Practices Rules and shown on the SOSEA maps (see WAC 222–16–086). SOSEA goals provide for demographic and/or dispersal support as necessary to complement the northern spotted owl protection strategies on Federal lands within or adjacent to the SOSEA (WAC 222–16–010).

The Companies will achieve these goals and objectives both in the near term and over the term of the SHA by immediately protecting special set-aside areas of northern spotted owl habitat and managing commercial forested lands in the plan area on an average rotation length of 60 years. In addition, the SHA provides silvicultural measures to benefit the northern spotted owl, including a snag-retention and creation program.

The SHA includes an elevated baseline, provisions for a 240-acre nesting set-aside and a 411-acre reserve in the White Salmon SOSEA, a 10-year deferral of harvest of any habitat in the 0.7-mile circle of the four site centers in which the Companies' covered lands comprise greater than 15 percent, future nest site protection, and the support and enhancement of existing conservation agreements. The SHA will include a monitoring and reporting schedule to ensure that the anticipated benefits will accrue both in the near term and over the term of the SHA.

Benefits of Inclusion—We find that there is minimal benefit from designating critical habitat for the northern spotted owl within the SDS SHA. It is unlikely that Federal projects would be proposed on these relatively remote forest lands unless it was a linear project such as a powerline, pipeline, or transportation project. Due to the scope of such projects, they would likely already have a Federal nexus regardless whether these lands are designated as critical habitat. Even where the SHA lands may not have nesting sites on them at this time, degradation of the habitats on the SHA or adjacent lands could be considered an adverse effect to the species. Because one of the primary threats to the northern spotted owl is habitat loss and degradation, the consultation process under section 7 of the Act for projects with a Federal nexus likely would, in evaluating effects to the northern spotted owl, evaluate the effects of the action on the conservation or functionality of the habitat for the species, regardless of whether critical habitat is designated for these lands. The analytical requirements to support a jeopardy determination on excluded land are similar, but not identical, to the requirements in an analysis for an adverse modification determination on land designated as critical habitat. However, the amount of conservation that could be attained through the addition of a critical habitat analysis to the section 7 consultation would be relatively low in comparison to the conservation provided by the SHA, as discussed below. The additional benefits of inclusion on the section 7 process are therefore relatively small.

The benefits of inclusion are further minimized because this SHA provides for the needs of the northern spotted owl by protecting and preserving landscape levels of suitable northern spotted owl nesting, roosting, and foraging habitat, as well as foraging and dispersal habitat over the term of the SHA in strategic landscapes, and implementing species-specific conservation measures designed to avoid and minimize effects to northern spotted owls. A fundamental requirement of an SHA is a determination by the Service that the provisions of the SHA will result in a net conservation benefit to the listed species. Approved SHAs have, therefore, already been determined to provide a net conservation benefit to the listed species. In addition, funding for management is ensured through the Implementation Agreement. Such assurances are typically not provided by section 7 consultations, which in contrast to SHAs, do not commit the project proponent to long-term, special management practices or protections. In addition, monitoring will track SHA progress over the term of the permit and provide feedback on management actions. Therefore, designation of critical habitat would be redundant on these lands, and would not provide additional measureable protections.

Another benefit of including lands in a critical habitat designation is that it serves to educate landowners, State and local governments, and the public regarding the potential conservation value of an area. This helps focus and promote conservation efforts by other parties by identifying areas of high conservation value for northern spotted owls. Designation of critical habitat could inform State agencies and local governments about areas that could be conserved under State laws or local ordinances, such as the Washington State Growth Management Act, which encourage the protection of ''critical areas'' including fish and wildlife habitat conservation areas. However, not only has the public process for this rulemaking provided information to the landowner, State agencies and local governments and the public about the importance of this area, but the process for approving a SHA, which also requires public notice and comment, has served this educational function too. Through these opportunities, land owners, State agencies, and local governments have become more aware of the status of and threats to listed species, and the conservation actions needed for recovery particularly as it relates to this property. For these reasons, we believe that the educational benefits that might accrue from critical habitat designation would be minimal.

Therefore, we find that there is minimal benefit from designating critical habitat for the northern spotted owl within this SHA.

Benefits of Exclusion—The benefits of excluding from designated critical habitat the approximately 2,035 ac (824 ha) of lands currently managed under the SHA are substantial and include maintaining our partnership with this landowner. This is important because it may encourage the company not to return to baseline immediately after expiration of the SHA.

Excluding lands with SHAs from critical habitat designation may also enhance our ability to seek new partnerships with future participants including States, counties, local jurisdictions, conservation organizations, and private landowners, which together can implement conservation actions that we would be unable to accomplish otherwise. If lands within the plan area are designated as critical habitat, it could have a negative effect on our ability to work with various companies to accomplish our goals for the SHA program and recovery of the northern spotted owl. This SHA is located in key northern spotted owl landscapes and contributes meaningfully to the recovery of the northern spotted owl. Two SOSEAs, the White Salmon and Columbia Gorge SOSEAs, encompass approximately 54 percent of the Companies' lands in Skamania and Klickitat Counties. The Companies' landscape-management approach contributes to northern spotted owl recovery by complementing the existing northern spotted owl landscape-management strategies on adjacent Federal and State forestlands. With the Companies' participation in northern spotted owl conservation, it will be the first time in these SOSEAs, that a private landowner has joined State and Federal land managers to

implement a landscape approach for northern spotted owl habitat. The Companies' lands provide a major link in the goal of managing both the Columbia River and White Salmon SOSEAs under a unified landscape-management regime rather than a competitive harvesting regime under owl-circle management.

The designation of critical habitat could nonetheless have an unintended negative effect on our relationship with non-Federal landowners due to the perceived imposition of redundant government regulation. If lands within the SDS SHA plan area are designated as critical habitat, it would likely have a negative effect on our ability to establish new partnerships to develop SHAs, HCPs, and other conservation plans, particularly plans that address landscape-level conservation of species and habitats. This SHA is being observed by other land and timber companies in Washington and Oregon and may serve as a model for ongoing and future efforts. By excluding these lands, we preserve our current private and local conservation partnerships and encourage additional conservation actions in the future.

Benefits of Exclusion Outweigh the Benefits of Inclusion—In summary, we determine that the benefits of excluding the SDS SHA from the designation of critical habitat for the northern spotted owl outweigh the benefits of including this area in critical habitat. We find that including it would result in minimal, if any, additional benefits to the northern spotted owl, as explained above. We also find that the benefits of including these lands are further minimized by the fact that the management strategies of the SHA are designed to maintain and enhance habitat for the northern spotted owl. The SHA includes species-specific avoidance and minimization measures, monitoring requirements to track success and ensure proper implementation, and forest-management practices and habitat conservation objectives that benefit the northern spotted owl and its habitat, which exceeds any conservation value provided as a result of a critical habitat designation. Furthermore, encouraging landowners to enter into voluntary conservation agreements with the Service for the recovery of endangered or threatened species which we believe would be one of the benefits of exclusion may outweigh the loss of benefit that may be incurred through a possible return to baseline following permit expiration.

Therefore, in consideration of the factors discussed above in the Benefits of Exclusion section, including the relevant impact to current and future partnerships, we have determined that the benefits of exclusion of lands covered by the Port Blakely SHA outweigh the benefits of critical habitat designation.

Exclusion Will Not Result in Extinction of the Species—We have determined that exclusion of a net of approximately 2,035 ac (824 ha) of lands within the SDS SHA will not result in extinction of the northern spotted owl because, under this agreement, the landscape management approach contributes to owl recovery by complementing the existing owl landscape-management strategies on adjacent Federal and State forestlands. The SDS SHA goals and objectives for the northern spotted owl are to provide dispersal and young forest marginal habitat across their ownership on a dynamic basis, as well as submature and higher quality habitat in harvest set-asides. These habitats provide both dispersal and demographic support, an established goal for lands within the two northern spotted owl special emphasis areas (SOSEAs). Further, for projects having a Federal nexus and affecting northern spotted owls in occupied areas, the jeopardy standard of section 7 of the Act, coupled with protection provided by the SDS SHA, would provide a level of assurance that this species will not go extinct as a result of excluding these lands from the critical habitat designation. We find that exclusion of these lands within the SDS SHA will not result in extinction of the northern spotted owl. Based on the above discussion, the Secretary is exercising his discretion under section 4(b)(2) of the Act to exclude from this final critical habitat designation portions of the proposed critical habitat units or subunits that are within the SDS SHA totaling about 2,035 ac (824 ha).

How We Evaluate Lands Protected Under HCPs for Exclusion

The consultation provisions under section 7(a)(2) of the Act constitute a regulatory benefit of critical habitat. Federal agencies must consult with us on actions that may affect critical habitat and must avoid destroying or adversely modifying critical habitat. In areas without designated critical habitat, Federal agencies consult with us on actions that may affect a listed species and must refrain from undertaking actions that are likely to jeopardize the continued existence of the species. Thus, the analysis of effects to critical habitat is a separate and different analysis from that of the effects to the species. The difference in outcomes of these two analyses represents the regulatory benefit of critical habitat. For some species, and in some locations, the outcome of these analyses will be similar, because effects on habitat will often result in effects on the species. However, the regulatory standard is different: The jeopardy analysis looks at the action's impact on survival and recovery of the species, while the adverse modification analysis looks at the action's effects on the designated habitat's contribution to the species' conservation. This will, in some instances, lead to different results or consultation where it might not have otherwise occurred (e.g. in habitat not currently occupied by the species).

Once an agency determines that consultation under section 7 of the Act is necessary, the process may conclude informally when we concur in writing that the proposed Federal action is not likely to adversely affect critical habitat. However, if the action agency determines through informal consultation that adverse effects are likely to occur, then it would initiate formal consultation, which would conclude when we issue a biological opinion on whether the proposed Federal action is likely to result in destruction or adverse modification of critical habitat. A biological opinion that concludes in a determination of no destruction or adverse modification may contain discretionary conservation recommendations to minimize adverse effects to critical habitat, but it would not contain any mandatory reasonable and prudent measures or terms and conditions because these do not apply to critical habitat. In addition, we suggest reasonable and prudent alternatives to the proposed Federal action only when our biological opinion finds that the action may destroy or adversely modify critical habitat.

The process of designating critical habitat as described in the Act requires, in part, that the Service identify those lands occupied at the time of listing on which are found the physical or biological features essential to the conservation of the species, which may require special management considerations or protection and any unoccupied lands that are essential to the conservation of the species. In identifying those lands, the Service must consider the recovery needs of the species. Once critical habitat has been designated, Federal agencies must consult with the Service under section 7(a)(2) of the Act on their actions that may adversely affect the species or critical habitat to ensure that their actions are not likely to adversely

modify critical habitat or jeopardize the continued existence of the species.

We find that in some cases, the conservation benefits to a species and its habitat that may be achieved through the designation of critical habitat are less than those that could be achieved through the implementation of a habitat conservation management plan that includes specific provisions based on enhancement or recovery as the management standard. Consequently, the implementation of any HCP or management plan that considers enhancement or recovery as the management standard will often provide as much or more benefit than a section 7(a)(2) consultation under the Act. There may be some regulatory benefit that results from designating critical habitat in the areas covered by the HCPs because of section 7 consultation requirements; however, they are often minimal compared to the benefits of exclusion.

Non-Federal landowners are often motivated to work with the Service collaboratively to develop HCPs because of the regulatory certainty provided by an incidental take permit under section 10(a)(1)(B) of the Act, including assurances under the No Surprises Policy (63 FR 8859; February 23, 1998). The No Surprises Policy sets forth a clear commitment to incidental take permittees that, to the extent consistent with the Act and other Federal laws, the government will not seek additional mitigation under an approved HCP where the permittee is implementing the HCP's terms and conditions. Although the HCP process can be complex and time-consuming, the benefit to landowners in undertaking this extensive process is not only incidental take authorization but the resulting regulatory certainty, which translates into real savings for private landowners in terms of opportunity costs, as well as direct savings and avoided costs. Designation of critical habitat within the boundaries of already approved HCPs may be viewed as a disincentive by other entities currently developing HCPs or contemplating them in the future, because it may be perceived as imposing duplicative regulatory burdens. In discussions with the Service, HCP permittees have indicated they view critical habitat designation as an unnecessary additional intrusion on their property, and have expressed concern that the Service may request new conservation measures for the northern spotted owl, even though they have an existing HCP and associated incidental take permit that has already gone through NEPA and the section 7 consultation process already in place.

Although parties whose actions may take listed species may still desire incidental take permits to avoid liability under section 9 of the Act, failure to exclude HCP lands from critical habitat could reduce the conservation value of the HCP program in several ways. First, parties may be less willing to seek a section 10 (a)(2) permit and develop an HCP where they are not certain their actions will cause incidental take in order to avoid involving the Federal government when that involvement could lead to future section 7 consultations because of critical habitat designation. Second, in any given HCP, applicants may reduce the amount of protection to which they are willing to agree, in effect holding some additional protective measures ''in reserve'' for use in any future discussions to address critical habitat. The failure to exclude qualified HCP lands from critical habitat designations could decrease the program's efficacy and have profound effects on our ability to establish and maintain important conservation partnerships with stakeholders.

Excluding qualified HCP lands from critical habitat provides permittees with the greatest possible certainty, and thereby may help foster the cooperation necessary to allow the HCP program to achieve the greatest possible conservation benefit. Thus, excluding the lands covered by HCPs may improve the Service's ability to enter into new partnerships. In addition, permittees who trust and benefit from the HCP process may encourage future HCP participants, such as States, counties, local jurisdictions, conservation organizations, and private landowners, leading to new HCPs that may result in implementation of conservation actions we would be unable to accomplish otherwise.

Excluding lands covered under HCPs from the critical habitat designation may also relieve landowners from the possibility of any additional regulatory burden and costs associated with the preparation of section 7 documents related to critical habitat. While the costs of providing these additional documents to the Service is minor, there may be resulting delays that generate perceived or very real costs to private landowners in the form of opportunity costs, as well as direct costs.

HCPs can provide other important conservation benefits, including the development of important biological information needed to guide conservation efforts and assist in species conservation outside the HCP planning area. Each of the HCPs evaluated below have some component of adaptive forest management to address uncertainties in achieving their agreed-upon conservation objectives for the northern spotted owl. The adaptive management strategy helps to ensure management will continue to be consistent with agreed-upon northern spotted owl conservation objectives.

Below is a brief description of each HCP and the lands proposed as critical habitat covered by each plan that we have excluded from critical habitat designation under section 4(b)(2) of the Act.

State of California

Green Diamond Resource Company Habitat Conservation Plan

In this final designation, the Secretary has exercised his authority to exclude lands from critical habitat, under section 4(b)(2) of the Act, that are covered under the Green Diamond Resource Company Northern Spotted Owl Habitat Conservation Plan of 1992. The Green Diamond Resource Company (Green Diamond, formerly Simpson Timber Company) operates under a northern spotted owl HCP within the Redwood Coast Critical Habitat Unit in California. The Incidental Take Permit (ITP) issued in association with this HCP was initially noticed in the **Federal Register** on May 27, 1992 (57 FR 22254) and issued September 17, 1992. Both the HCP and the permit had a term of 30 years, with a comprehensive review scheduled after 10 years to review the efficacy of the plan. The permit allows incidental take of up to 50 pairs of northern spotted owls and their habitat during the course of timber harvest operations on 369,384 ac (149,484 ha) of forest lands in Del Norte and Humboldt Counties.

At the time the permit was issued, more than 100 northern spotted owl nest sites or activity centers were known or suspected on the property. The Service determined that the projected growth and harvest rates indicated more habitat of the age class primarily used by northern spotted owls would exist on the property at the end of the 30-year permit period. In addition, the HCP provided that nest sites would be protected during the breeding season, and no direct killing or injuring of owls was anticipated. Green Diamond also agreed to continue their monitoring programs, in which more than 250 adult owls and more than 100 juveniles were already banded, as well as analyses of timber stands used by owls. As required by the terms of the HCP, Green Diamond and the Service conducted a comprehensive review of the first 20

years of implementation, including a comparison of actual and estimated levels of owl displacement, a comparison of estimated and actual distribution of habitat, a reevaluation of the biological basis for the HCP's conservation strategy, an examination of the efficacy of and continued need for habitat set-asides, and an estimate of future owl displacements. During the comprehensive review, Green Diamond requested an amendment to the 1992 ITP to allow incidental take of up to eight additional northern spotted owl pairs. This request was noticed in the **Federal Register** on February 26, 2007 (72 FR 8393) and the modified permit was issued in October 2007.The original Green Diamond Northern Spotted Owl HCP relied on extensive monitoring and research to inform development of more comprehensive conservation strategies for their lands. The outcome of 20 years of implementation of Green Diamond's 1992 informed the Service and Green Diamond on how to develop new, or modify the original, conservation strategies to further benefit the northern spotted owl.

On April 16, 2010, we announced our intent to prepare an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) in response to an expected new HCP from Green Diamond, which would include provisions for the northern spotted owl and possibly the Pacific fisher (*Martes pennanti*), a species that may be considered for listing during the term of the HCP. This new HCP, if completed and approved, would replace the 1992 HCP, and would require the issuance of a new incidental take permit. The proposed new HCP is intended to address the retention of suitable northern spotted owl nesting habitat, the development of older forest habitat elements and habitat structures, and future establishment of northern spotted owl nest sites in streamside retention zones. In addition, the new plan will help cluster owl sites in favorable habitat areas, and initiate future research on other wildlife species such as fishers and barred owls. Since this new draft HCP has not yet been completed, the draft HCP does not serve as the basis for exclusion and we only provide this information in terms of demonstrating the progression of involvement and partnership between the Service and Green Diamond. The existing HCP, originally completed in 1992, is still in effect as of this date and serves, in part, as the basis for this exclusion.

Since approval of the 1992 HCP, personnel from Green Diamond, along with academic and research institutions, have been the largest single contributor of scientific information on the ecology of northern spotted owls and their habitats on managed forest lands in the redwood region, in the form of graduate theses and peer-reviewed papers. Since the initial listing of the northern spotted owl in 1990, Green Diamond has maintained on their lands 1 of the 11 demographic study areas within the range of the northern spotted owl that have been used for rangewide monitoring and evaluation of populations and population trends in the Pacific northwest. This important demographic information is reported in a continuing series of monographs, the most recent being Forsman *et al.* (2011).

Benefits of Inclusion—We find there are minimal benefits to including these lands in critical habitat. As discussed above, the designation of critical habitat invokes the provisions of section 7. However, in this case, we find the requirement that Federal agencies consult with us and ensure that their actions are not likely to destroy or adversely modify critical habitat will not result in significant benefits to the species because the possibility of a Federal nexus for a project on these lands that might trigger such consultation is limited; there is little likelihood of an action that will involve Federal funding, authorization, or implementation. In addition, since the lands under the HCP in question are occupied by the northern spotted owl, if a Federal nexus were to occur, section 7 consultation would already be triggered and the Federal agency would consider the effects of its actions on the species through a jeopardy analysis. While the jeopardy and adverse modification standards are different, the additional conservation that could be attained through the supplemental adverse modification analysis for critical habitat under section 7 would not be significant in light of the benefits of the HCP, which already incorporates protections and management objectives for the northern spotted owl and the habitat upon which it depends for breeding, sheltering, and foraging activities. The conservation approach identified in the Green Diamond HCP, along with our close coordination with the company, addresses the identified threats to northern spotted owl on lands covered by the HCP that contain the physical or biological features essential to the conservation of the species. The conservation measures identified within the HCP seek to achieve conservation goals for northern spotted owls and their habitat, and thus can be of greater conservation benefit than the designation of critical habitat, which does not require specific, proactive actions. HCPs typically provide for greater conservation benefits to a covered species than section 7 consultations because HCPs ensure the long-term protection and management of a covered species and its habitat. In addition, funding for such management is ensured through the Implementation Agreement. Such assurances are typically not provided by section 7 consultations, which in contrast to HCPs, often do not commit the project proponent to long-term, special management practices or protections. Thus, a section 7 consultation typically does not afford the lands it covers similar extensive benefits as an HCP. In addition, the protections of critical habitat come into play only in the event of a Federal action, whereas the protections of an HCP are in continuous force.

Another potential benefit of including lands in a critical habitat designation is that the designation can serve to educate landowners, State and local government agencies, and the public regarding the potential conservation value of an area, and may help focus conservation efforts on areas of high conservation value for certain species. Any information about the northern spotted owl and its habitat that reaches a wider audience, including parties engaged in conservation activities, is valuable. However, in this case the educational value of critical habitat is limited. Green Diamond has already made substantial contributions to our knowledge of the species through research and monitoring without critical habitat designated on their lands. In addition, the educational and informational benefits that might arise from critical habitat designation have been largely accomplished through the public review and comment on the HCP and associated documents. The release of the Revised Recovery Plan for the Northern Spotted Owl in 2011 was also preceded by outreach efforts and public comment opportunities. Furthermore, we conducted extensive outreach efforts on the proposed revision of critical habitat, including multiple public information meetings and opportunities for public comment. Through these outreach opportunities, land owners, State agencies, and local governments have become aware of the status of and threats to the northern spotted owl, and the conservation actions needed for recovery.

The designation of critical habitat may also indirectly cause State or county jurisdictions to initiate their own additional requirements in areas identified as critical habitat. These

measures may include additional permitting requirements or a higher level of local review on proposed projects. However, CALFIRE has indicated to us that it is unlikely to impose any new requirements on project proponents if critical habitat is designated in areas already subject to California Forest Practice Rules. Therefore, we believe this potential benefit of critical will be limited.

Benefits of Exclusion—The benefits of excluding from designated critical habitat the approximately 369,864 ac (149,484 ha) of lands currently managed under the Green Diamond HCP are significant. We have created a close partnership with Green Diamond through development of the HCP, and they have proven to be an invaluable partner in the conservation of the northern spotted owl. Green Diamond has made a significant contribution to our knowledge of the northern spotted owl through their support of continuing research on their lands. Excluding the approximately 369,864 ac (149,484 ha) owned and managed by Green Diamond from critical habitat designation will sustain and enhance the working relationship between the Service and Green Diamond. The willingness of Green Diamond to work with the Service in innovative ways to conduct solid scientific research and manage federally listed species will continue to reinforce those conservation efforts and our partnership, which contribute toward achieving recovery of the northern spotted owl. Due to the important research they are facilitating, we consider this voluntary partnership in conservation vital to our understanding of the northern spotted owl status of species on non-Federal lands and necessary for us to implement recovery actions such as habitat protection and restoration, and beneficial management actions for species.

The designation of critical habitat could have an unintended negative effect on our relationship with non-Federal landowners due to the perceived imposition of redundant government regulation. If lands within the Green Diamond HCP are designated as critical habitat, it would likely have a negative effect on our continued ability to seek new partnerships with future participants including States, counties, local jurisdictions, conservation organizations, and private landowners, which together can implement various conservation actions (such as SHAs, HCPs, and other conservation plans) that we would be unable to accomplish otherwise. In addition, our conservation partnership with Green Diamond may serve as a model and aid in fostering future cooperative relationships with other parties in other locations for the benefit of listed species. We consider the positive effect of excluding proven conservation partners from critical habitat to be a significant benefit of exclusion.

The Benefits of Exclusion Outweigh the Benefits of Inclusion—We reviewed and evaluated the exclusion of approximately 369,864 ac (149,484 ha) of land owned and managed by the Green Diamond Resource Company from our designation of critical habitat. The benefits of including these lands in the designation are comparatively small, since the habitat on the covered lands is already being monitored and managed under the current HCP to improve the habitat elements that are equivalent to the physical or biological features outlined in this critical habitat rule. Any potential regulatory benefits of critical habitat would be minimal, at best, as additional Federal review on individual proposed actions is episodic and confined to the scope and scale of the specific Federal actions that take the form of project review or granting of funds. In any case, any potential regulatory benefit that would be gained from a supplemental adverse modification analysis, should section 7 be triggered, would likely be minimal since the protections afforded by critical habitat would be duplicative with the protections provided through the HCP. Educational benefits to the company that might be attributed to critical habitat designation are limited because the company already has an active program of research and analysis that is embedded in company planning. In addition, extensive outreach efforts that have already occurred in conjunction with the HCP, Revised Recovery Plan, and the proposed revision of critical habitat have raised awareness of the current status of and threats to the northern spotted owl, and the conservation actions needed for recovery. Green Diamond has made a significant contribution to the body of scientific information about the northern spotted owl in the redwood region.

In this instance, the regulatory and educational benefits of inclusion in critical habitat are minimal compared to the significant benefits gained through our conservation partnership with Green Diamond. In addition, the conservation measures of their HCP serves not only an educational function for the company and local and State regulatory jurisdictions, but also provides for significant conservation and management of northern spotted owl habitat and contributes to the recovery of the species. The HCP provisions for protecting and maintaining northern spotted owl habitat far exceed the conservation benefits that would be obtainable through section 7 consultation. The company's current program of research on the northern spotted owl habitat and demographics could not be obtained through section 7 consultation.

Exclusion of these lands from critical habitat will help foster the partnership we have developed with Green Diamond, partly through the development and continuing implementation of the HCP, and partly through the encouragement of elective actions by the company that are unconnected to the HCP. For example, Green Diamond's elective role in maintaining a demographic study area, which is a key part of the network of demographic study areas essential to determining the rangewide population trends of the northern spotted owl, is integral to continuing research on the species. Our partnership with Green Diamond not only provides a benefit for the conservation of the northern spotted owl, but it may also serve as a model and aid in fostering future cooperative relationships with other parties in other locations for the benefit of listed species. For these reasons, we have determined that the benefits of exclusion of lands covered by the Green Diamond Resource Company HCP outweigh the benefits of critical habitat designation.

Exclusion Will Not Result in Extinction of the Species—We have determined that the exclusion of 369,864 ac (149,484 ha) from the designation of critical habitat for the northern spotted owl of lands owned and managed by the Green Diamond Resource Company, as identified in their HCP, will not result in extinction of the species because current conservation efforts under the plan adequately protect the geographical areas containing the physical or biological features essential to the conservation of the species. For those infrequent projects having a Federal nexus and affecting northern spotted owls on these lands, which are occupied by the species, the jeopardy standard of section 7 of the Act, coupled with protection provided by the current Green Diamond HCP, would provide a level of assurance that this species will not go extinct as a result of excluding these lands from the critical habitat designation. Based on the above discussion, the Secretary is exercising his discretion under section 4(b)(2) of

the Act to exclude from this final critical habitat designation portions of the proposed critical habitat units or subunits that are within the Green Diamond HCP boundary totaling 369,864 ac (149,484 ha).

Humboldt Redwood Company Habitat Conservation Plan

In this final designation, the Secretary has exercised his authority to exclude lands from critical habitat, under section 4(b)(2) of the Act, that are covered under the Humboldt Redwood Company (formerly Pacific Lumber) HCP in the Redwood Coast CHU in California. The permit under this HCP with a term of 50 years was noticed on July 14, 1998 (63 FR 37900) and issued on March 1, 1999. The HCP includes 208,172 ac (84,244 ha) of commercial timber lands in Humboldt County, essentially all of the formerly Pacific Lumber timberlands outside of the Headwaters Reserve, which is currently under Bureau of Land Management administration. The Humboldt Redwood Company HCP includes nine nonlisted species (including one candidate species) and three listed species, including the northern spotted owl. Activities covered by the HCP include forest management activities and mining or other extractive activities. With regard to the northern spotted owl in particular, the HCP addresses the harvest, retention, and recruitment of requisite habitat types and elements within watershed assessment areas and individual northern spotted owl activity sites. The management objectives of the HCP are to minimize disturbance to northern spotted owl activity sites, monitor to determine whether these efforts maintain a high-density and productive population of northern spotted owls, and apply adaptive forest management provisions as necessary to evaluate or modify existing conservation measures. In addition, there are specific habitat retention requirements to conserve habitat for foraging, roosting, and nesting at northern spotted owl activity sites. The other conservation elements of the HCP are also expected to aid in the retention and recruitment of potential foraging, roosting, and nesting habitat in watersheds across the ownership. For example, the HCP establishes a network of marbled murrelet conservation areas, outlines silvicultural requirements associated with riparian management zones and mass wasting avoidance areas, imposes cumulative effects/disturbance index restrictions, and contains a retention standard of 10 percent late seral habitat in each watershed assessment. Each of these measures is likely to provide additional suitable habitat for the northern spotted owl.

Benefits of Inclusion—We find there are minimal benefits to including these lands in critical habitat. As discussed above, the designation of critical habitat invokes the provisions of section 7. However, in this case, we find the requirement that Federal agencies consult with us and ensure that their actions are not likely to destroy or adversely modify critical habitat will not result in significant benefits to the species because the possibility of a Federal nexus for a project on these lands that might trigger such consultation is limited since there is little likelihood of an action that will involve Federal funding, authorization, or implementation. In addition, since the lands under the HCP in question are occupied by the northern spotted owl, if a Federal nexus were to occur, section 7 consultation would already be triggered and the Federal agency would consider the effects of its actions on the species through a jeopardy analysis. Although the jeopardy and adverse modification standards are different, the additional conservation that could be attained through the supplemental adverse modification analysis for critical habitat under section 7 would not be significant because the HCP incorporates protections and management objectives for the northern spotted owl and the habitat upon which it depends for breeding, sheltering, and foraging activities. The conservation approach identified in the HCP, along with our close coordination with the Humboldt Redwood Company, addresses the identified threats to northern spotted owl on lands covered by the HCP that contain the physical or biological features essential to the conservation of the species. The conservation measures identified within the HCP seek to achieve conservation goals for northern spotted owls and their habitat, and thus can be of greater conservation benefit than the designation of critical habitat, which does not require specific, proactive actions. HCPs typically provide for greater conservation benefits to a covered species than section 7 consultations because HCPs ensure the long-term protection and management of a covered species and its habitat. In addition, funding for such management is ensured through the Implementation Agreement. Such assurances are typically not provided by section 7 consultations, which in contrast to HCPs, often do not commit the project proponent to long-term, special management practices or protections. Thus, a section 7 consultation typically does not afford the lands it covers similar extensive benefits as an HCP. In addition, the protections of critical habitat come into play only in the event of a Federal action, whereas the protections of an HCP are in continuous force.

The HCP conservation measures that provide direct and indirect benefits to the northern spotted owl and its habitat have been implemented continuously since 1999 on all covered lands owned and managed by the Humboldt Redwood Company. Northern spotted owl conservation measures are subject to re-evaluation and modification through active adaptive forest management provisions in the Plan, which can be initiated by the Service or by the Company.

Another benefit of including lands in a critical habitat designation is that it serves to educate landowners, State and local governments, and the public regarding the potential conservation value of an area. This helps focus and promote conservation efforts by other parties by identifying areas of high conservation value for northern spotted owls. Any information about the northern spotted owl and its habitat that reaches a wider audience, including parties engaged in conservation activities, is valuable. The landowners in this case are aware of the needs of the species through the development of their HCP, in which they have agreed to take measures to protect the northern spotted owl and its habitat. Any additional educational and information benefits that might arise from critical habitat designation have been largely accomplished through the public review of and comment on the HCP and the associated permit. The release of the Revised Recovery Plan for the Northern Spotted Owl in 2011 was also preceded by outreach efforts and public comment opportunities. In addition, the rulemaking process associated with critical habitat designation included several opportunities for public comment, and we also held multiple public information meetings across the range of the species. Through these outreach opportunities, land owners, State agencies, and local governments have become aware of the current status of and threats to the northern spotted owl, and the conservation actions needed for recovery.

The designation of critical habitat may also indirectly cause State or county jurisdictions to initiate their own additional requirements in areas identified as critical habitat. These measures may include additional permitting requirements or a higher

level of local review on proposed projects. However, CALFIRE has indicated to use that it is unlikely to impose any new requirements on project proponents if critical habitat is designated in areas already subject to California Forest Practice Rules. Therefore, we believe this potential benefit of critical will be limited.

Benefits of Exclusion—The benefits of excluding from designated critical habitat the approximately 208,172 ac (84,244 ha) of lands currently managed under the Humboldt Redwood Company (formerly Pacific Lumber Company) HCP are significant. Although the HCP was originally negotiated with Pacific Lumber, we have developed a good working rapport with Humboldt Redwood Company, and expect this conservation partnership to continue through the implementation of the HCP. We consider conservation partnerships with private landowners to represent an integral component of recovery for listed species. However, the designation of critical habitat could have an unintended negative effect on our relationship with non-Federal landowners due to the perceived imposition of redundant government regulation. If lands within the Humboldt Redwood Company HCP are designated as critical habitat, it would likely have a chilling effect on our continued ability to seek new partnerships with future participants including States, counties, local jurisdictions, conservation organizations, and private landowners, which together can implement various conservation actions (such as SHAs, HCPs, and other conservation plans) that we would be unable to accomplish otherwise.

Excluding the approximately 208,172 ac (84,244 ha) owned and managed by the Humboldt Redwood Company from critical habitat designation will sustain and enhance the working relationship between the Service and the Company, and will bolster our ability to pursue additional conservation partnerships for the benefit of listed species. The willingness of the Humboldt Redwood Company to work with us to manage their forest lands for the benefit of the northern spotted owl will continue to reinforce those conservation efforts and our partnership, which contributes to the recovery of the species. We consider this voluntary partnership in conservation important to our understanding of the status of northern spotted owls on non-Federal lands and necessary for us to implement recovery actions such as habitat protection and restoration, and beneficial management actions for species. In addition, as noted above, our conservation partnership with the Humboldt Redwood Company may serve as a model and aid in fostering future cooperative relationships with other parties in other locations for the benefit of listed species. We consider the positive effect of excluding proven conservation partners from critical habitat to be a significant benefit of exclusion.

The Benefits of Exclusion Outweigh the Benefits of Inclusion—We have reviewed and evaluated the exclusion, from critical habitat designation, of approximately 208,172 ac (84,244 ha) of land owned and managed by the Humboldt Redwood Company. The benefits of including these lands in the designation are comparatively small, since the habitat on the covered lands is already being monitored and managed under the current HCP to improve the habitat elements that are equivalent to the physical or biological features that are outlined in this critical habitat rule. Because one of the primary threats to the northern spotted owl is habitat loss and degradation, the consultation process under section 7 of the Act for projects with a Federal nexus in areas occupied by the species, such as is the case here, will, in evaluating effects to the northern spotted owl, evaluate the effects of the action on the conservation or function of the habitat for the species regardless of whether critical habitat is designated for these lands. The analytical requirements to support a jeopardy determination on excluded land are similar, but not identical, to the requirements in an analysis for an adverse modification determination on included land. However, the HCP provides habitat conservation measures that apply for the benefit of northern spotted owl. In addition, educational benefits are limited, since outreach efforts associated with various conservation actions for this species have been extensive, and members of the public, as well as State and local agencies, are likely familiar with the species and its biological needs. Company personnel are knowledgeable in the ecology of the northern spotted owl and have contributed to the body of scientific information about the northern spotted owl in the redwood region. In this case, the regulatory and education benefits of inclusion are less than the continued benefit of this conservation partnership.

Humboldt Redwood Company has made important contributions to our understanding of the ecology of the northern spotted owl and its habitats in the redwood region, and continues to do so through HCP implementation and long-term monitoring. The Service recognizes the conservation value of partnerships with non-Federal landowners, such as the Humboldt Redwood Company, which allow us to achieve conservation measures that would not otherwise be attainable on these private lands. We have determined that our conservation partnership with the Humboldt Redwood Company HCP, in conjunction with the conservation measures provided in the HCP, provide a greater benefit than would the regulatory and educational benefits of critical habitat designation. Furthermore, we have determined that the additional regulatory benefits of designating critical habitat, afforded through the section 7(a)(2) consultation process, are minimal because of limited Federal nexus and because conservation measures specifically benefitting the northern spotted owl and its habitat are in place through the implementation of the HCP. Therefore, in consideration of the factors discussed above in the Benefits of Exclusion section, including the relevant impact to current and future partnerships, we have determined that the benefits of exclusion of lands covered by the Humboldt Redwood Company HCP outweigh the benefits of critical habitat designation.

Exclusion Will Not Result in Extinction of the Species—We have determined that the exclusion of 208,172 ac (84,244 ha) from the designation of critical habitat for the northern spotted owl of lands owned and managed by the Humboldt Redwood Company, as identified in their HCP, will not result in extinction of the species because current conservation efforts under the plan adequately protect the geographical areas containing the physical or biological features essential to the conservation of the species. For projects having a Federal nexus and affecting northern spotted owls in occupied areas, which is the case here, the jeopardy standard of section 7 of the Act, coupled with protection provided by the current Humboldt Redwood Company HCP, would provide a high level of assurance that this species will not go extinct as a result of excluding these lands from the critical habitat designation. Based on the above discussion, the Secretary is exercising his discretion under section 4(b)(2) of the Act to exclude from this final critical habitat designation portions of the proposed critical habitat units or subunits that are within the Humboldt Redwood Company HCP boundary totaling 208,172 ac (84,244 ha).

Regli Estate Habitat Conservation Plan

In this final designation, the Secretary has exercised his authority to exclude lands from critical habitat, under section 4(b)(2) of the Act, that are covered under the Regli Estate HCP in the Redwood Coast CHU. The permit issued under this HCP in 1995 (noticed July 17, 1995 (60 FR 36432) and issued August 30, 1995) covers 484 ac (196 ha) in Humboldt County, California, to be used for forest management activities.

Two listed species, the marbled murrelet and northern spotted owl, as well as two nonlisted species, are covered under the incidental take permit. Provisions in the HCP for the northern spotted owl include the mitigation of impacts from forest management activities by using single-tree selection silviculture that would retain owl foraging habitat suitability in all harvested areas; protecting an 80-ac (32-ha) core nesting area for one of the two owl pairs known to exist in the HCP area; and planting conifer tree species on approximately 73 ac (30 ha) of currently nonforested habitat within the HCP area, which would result in a net increase in forested habitat over time. In addition, take of owls would be minimized using seasonal protection measures specified in the HCP.

Benefits of Inclusion—We find there are minimal benefits to including these lands in critical habitat. As discussed above, the designation of critical habitat invokes the provisions of section 7. However, in this case, we find the requirement that Federal agencies consult with us and ensure that their actions are not likely to destroy or adversely modify critical habitat will not result in significant benefits to the species because the possibility of a Federal nexus for a project on these lands that might trigger such consultation is limited since there is little likelihood of an action that will involve Federal funding, authorization, or implementation. In addition, since the lands under the HCP in question are occupied by the northern spotted owl, if a Federal nexus were to occur, section 7 consultation would already be triggered and the Federal agency would consider the effects of its actions on the species through a jeopardy analysis. The additional conservation that could be attained through the supplemental adverse modification analysis for critical habitat under section 7 would not be significant because this HCP incorporates measures that specifically benefit the northern spotted owl and its habitat. The HCP incorporates protections and management objectives for the northern spotted owl designed to produce a net increase in forested habitat for the species over time. The conservation measures identified within the HCP seek to achieve conservation goals for northern spotted owls and their habitat can be of greater conservation benefit than the designation of critical habitat, which does not require specific, proactive actions. HCPs typically provide for greater conservation benefits to a covered species than section 7 consultations because HCPs ensure the long-term protection and management of a covered species and its habitat. In addition, funding for such management is ensured through the Implementation Agreement. Such assurances are typically not provided by section 7 consultations, which in contrast to HCPs, often do not commit the project proponent to long-term, special management practices or protections. Thus, a section 7 consultation typically does not afford the lands it covers similar extensive benefits as an HCP. In addition, the protections of critical habitat come into play only in the event of a Federal action, whereas the protections of an HCP are in continuous force.

Another benefit of including lands in a critical habitat designation is that it serves to educate landowners, State and local governments, and the public regarding the potential conservation value of an area. This helps focus and promote conservation efforts by other parties by identifying areas of high conservation value for northern spotted owls. Any information about the northern spotted owl and its habitat that reaches a wider audience, including parties engaged in conservation activities, is valuable. The landowners in this case are aware of the needs of the species through the development of their HCP, in which they have agreed to take measures to protect the northern spotted owl and its habitat. Any additional educational and information benefits that might arise from critical habitat designation have been largely accomplished through the public review of and comment on the HCP and the associated permit. The release of the Revised Recovery Plan for the Northern Spotted Owl in 2011 was also preceded by outreach efforts and public comment opportunities. In addition, the rulemaking process associated with critical habitat designation included several opportunities for public comment, and we also held multiple public information meetings across the range of the species. Through these outreach opportunities, land owners, State agencies, and local governments have become aware of the current status of and threats to the northern spotted owl, and the conservation actions needed for recovery.

The designation of critical habitat may also indirectly cause State or county jurisdictions to initiate their own additional requirements in areas identified as critical habitat. These measures may include additional permitting requirements or a higher level of local review on proposed projects. However, CALFIRE has indicated to us that it is unlikely to impose any new requirements on project proponents if critical habitat is designated in areas already subject to California Forest Practice Rules. Therefore, we believe this potential benefit of critical will be limited.

Benefits of Exclusion—The benefits of excluding from critical habitat designation the approximately 484 ac (196 ha) of lands currently managed under the HCP are greater than those that would accrue from inclusion. We have developed a conservation partnership with Regli Estate through the development and implementation of the HCP. The conservation measures that provide a benefit to the northern spotted owl and its habitat have been, and will continue to be, implemented continuously beginning with the issuance of the Incidental Taking Permit in 1995 and continuing through the 20-year term of the permit, through 2015. These measures include use of single-tree selection silviculture to retain owl foraging habitat suitability, protection of an 80-ac (32-ha) core nesting area for one of the two known owl pairs, and reforestation of approximately 73 ac (30 ha) of ''old-field'' grasslands, the latter which has already been accomplished and will result in a net increase in forested habitat over time. A significant benefit of exclusion would be the increased likelihood of this landowner continuing with conservation actions for the northern spotted owl and its habitat, such as the development of a new HCP and application for a new incidental take permit upon the expiration of their current permit.

The HCP incorporates protections and management objectives for the northern spotted owl and the habitat upon which it depends for breeding, sheltering, and foraging activities. The approach used in the HCP, along with our close coordination with the landowner, addresses the identified threats to northern spotted owl on covered lands that contain the physical or biological features essential to the conservation of the species. The conservation measures identified within the HCP seek to maintain or surpass current habitat

suitability for northern spotted owls, and thus can be of greater conservation benefit than the designation of critical habitat, which does not require specific, proactive actions.

Excluding the approximately 484 ac (196 ha) of this covered land from critical habitat designation will sustain and enhance the working relationship between the Service and the owner, and will increase the likelihood that the owner will update the HCP and apply for a new incidental take permit when the current permit expires in 2015. The willingness of the landowner to work with the Service to manage federally listed species will continue to reinforce those conservation efforts and our partnership, which contribute toward achieving recovery of the northern spotted owl. We consider this voluntary partnership in conservation important in maintaining our ability to implement recovery actions such as habitat protection and restoration, and beneficial management actions for species on non-Federal lands. The Service recognizes the importance of non-Federal landowners in contributing to the conservation and recovery of listed species, and seeks to maintain and promote these partnerships for the benefit of all threatened and endangered species.

We consider conservation partnerships with private landowners to represent an integral component of recovery for listed species. However, the designation of critical habitat could have an unintended negative effect on our relationship with non-Federal landowners due to the perceived imposition of redundant government regulation. If lands within the Regli Estate HCP are designated as critical habitat, it would likely have a chilling effect on our continued ability to seek new partnerships with future participants including States, counties, local jurisdictions, conservation organizations, and private landowners, which together can implement various conservation actions (such as SHAs, HCPs, and other conservation plans) that we would be unable to accomplish otherwise. We therefore consider the positive effect of excluding proven conservation partners from critical habitat to be a significant benefit of exclusion.

The Benefits of Exclusion Outweigh the Benefits of Inclusion—We reviewed and evaluated the exclusion of approximately 484 ac (196 ha) of land owned and managed by Regli Estate from our designation of critical habitat. The benefits of including these lands in the designation are relatively small. Because one of the primary threats to the northern spotted owl is habitat loss and degradation, the consultation process under section 7 of the Act for projects with a Federal nexus in areas occupied by the species, such as is the case here, will, in evaluating effects to the northern spotted owl, evaluate the effects of the action on the conservation or function of the habitat for the species regardless of whether critical habitat is designated for these lands. The analytical requirements to support a jeopardy determination on excluded land are similar, but not identical, to the requirements in an analysis for an adverse modification determination on included land. However, the HCP provides habitat conservation measures that apply for the benefit of northern spotted owl, and remains in place regardless of critical habitat. In addition, for the reasons described above, the educational benefits of designation in this instance are minimal.

Exclusion of these lands from critical habitat will help foster the partnership we have developed with the company, through the continuing implementation of the HCP. Furthermore, we believe exclusion of these lands from critical habitat will increase the likelihood that the owner will update the HCP and apply for a new incidental take permit when the current permit expires in 2015, thereby ensuring continuing benefits to the northern spotted owl and its habitat on these lands. The HCP has provisions for protecting and maintaining northern spotted owl habitat that exceed the conservation benefits that could be obtained through section 7 consultation. These measures will not only prevent the degradation of essential features of the northern spotted owl, but they will maintain or improve these features over time. Finally, this partnership may serve as a model and aid in fostering future cooperative relationships with other parties in other locations for the benefit of listed species.

In summary, we have determined that our conservation partnership with the Regli Estate, in conjunction with the conservation measures provided in the HCP, provide a greater benefit than would the regulatory and educational benefits of critical habitat designation. We have determined that the additional regulatory benefits of designating critical habitat, afforded through the section 7(a)(2) consultation process, are minimal because the probability of a Federal nexus for projects on this land is limited in scope and will occur episodically at most. On the other hand, the conservation measures specifically benefitting the northern spotted owl and its habitat are in continuous effect throughout the lands covered by this HCP. Finally, the Service acknowledges the importance of conservation partnerships with private landowners in achieving the recovery of listed species, such as the northern spotted owl, and recognizes the positive benefits that accrue to conservation through the exclusion of recognized conservation partners from critical habitat. Therefore, in consideration of the factors discussed above in the *Benefits of Exclusion* section, including the relevant impact to current and future partnerships, we have determined that the benefits of exclusion of lands covered by the Regli Estate Habitat Conservation Plan outweigh the benefits of critical habitat designation.

Exclusion Will Not Result in Extinction of the Species—We have determined that the exclusion of 484 ac (196 ha) of Regli Estate lands from the designation of critical habitat for the northern spotted owl, as identified in their HCP, will not result in extinction of the species because current conservation efforts under the plan adequately protect the geographical areas containing the physical or biological features essential to the conservation of the species. For projects having a Federal nexus and affecting northern spotted owls in occupied areas, as is the case here, the jeopardy standard of section 7 of the Act, coupled with protection provided under the terms of the HCP, would provide assurances that this species will not go extinct as a result of excluding these lands from the critical habitat designation. Based on the above discussion, the Secretary is exercising his discretion under section 4(b)(2) of the Act to exclude from this final critical habitat designation portions of the proposed critical habitat units or subunits that are within the Regli Estate Habitat Conservation Plan boundary totaling 484 ac (196 ha).

Terra Springs Habitat Conservation Plan

In this final designation, the Secretary has exercised his authority to exclude 39 ac (16 ha) of lands from critical habitat, under section 4(b)(2) of the Act, that are covered under the Terra Springs LLC HCP in subunit 6 of the Interior California Coast CHU. The permit issued in association with this HCP (noticed October 29, 2002 (67 FR 65998), and issued in 2004) has a term of 30 years and includes a total of 76 ac (31 ha) of covered land second-growth forest lands in Napa County, California. This HCP addresses the effects of timber harvest and conversion of forest lands to vineyard and subsequent maintenance, in perpetuity, of suitable northern

spotted owl habitat characteristics on the remaining 39 ac (16 ha) of mature (80–120 years) Douglas-fir forest on covered lands. The HCP provides a conservation program to minimize and mitigate for the covered activities, including a deed restriction that requires management in perpetuity of 39 ac (16 ha) of the property as nesting and roosting quality habitat for the northern spotted owl. In addition to mitigation, the Plan also includes measures to minimize take of the northern spotted owl.

Benefits of Inclusion—We find there are minimal benefits to including these lands in critical habitat. As discussed above, the designation of critical habitat invokes the provisions of section 7. However, in this case, we find the requirement that Federal agencies consult with us and ensure that their actions are not likely to destroy or adversely modify critical habitat will not result in significant benefits to the species because the possibility of a Federal nexus for a project on these lands that might trigger such consultation is limited since there is little likelihood of an action that will involve Federal funding, authorization, or implementation. In addition, since the lands under the HCP in question are occupied by the northern spotted owl, if a Federal nexus were to occur, section 7 consultation would already be triggered and the Federal agency would consider the effects of its actions on the species through a jeopardy analysis. The additional conservation that could be attained through the supplemental adverse modification analysis for critical habitat under section 7 would not be significant because this HCP incorporates measures that specifically benefit the northern spotted owl and its habitat. The HCP incorporates protections and management objectives for the northern spotted owl designed to maintain suitable habitat on the property for the species in perpetuity. The conservation measures identified within the HCP seek to achieve conservation goals for northern spotted owls and their habitat that can be of greater conservation benefit than the designation of critical habitat, which does not require specific, proactive actions. HCPs typically provide for greater conservation benefits to a covered species than section 7 consultations because HCPs ensure the long-term protection and management of a covered species and its habitat. In addition, funding for such management is ensured through the Implementation Agreement. Such assurances are typically not provided by section 7 consultations, which in contrast to HCPs, often do not commit the project proponent to long-term, special management practices or protections. Thus, a section 7 consultation typically does not afford the lands it covers similar extensive benefits as an HCP. In addition, the protections of critical habitat come into play only in the event of a Federal action, whereas the protections of an HCP are in continuous force.

Another benefit of including lands in a critical habitat designation is that it serves to educate landowners, State and local governments, and the public regarding the potential conservation value of an area. This helps focus and promote conservation efforts by other parties by identifying areas of high conservation value for northern spotted owls. The landowners in this case are aware of the needs of the species through the development of their HCP, in which they have agreed to take measures to protect the northern spotted owl and its habitat. Any additional educational and information benefits that might arise from critical habitat designation have been largely accomplished through the public review of and comment on the HCP and the associated permit. The release of the Revised Recovery Plan for the Northern Spotted Owl in 2011 was also preceded by outreach efforts and public comment opportunities. In addition, the rulemaking process associated with critical habitat designation included several opportunities for public comment, and we also held multiple public information meetings across the range of the species. Through these outreach opportunities, land owners, State agencies, and local governments have become aware of the current status of and threats to the northern spotted owl, and the conservation actions needed for recovery.

The designation of critical habitat may also indirectly cause State or county jurisdictions to initiate their own additional requirements in areas identified as critical habitat. These measures may include additional permitting requirements or a higher level of local review on proposed projects. However, CALFIRE has indicated to use that it is unlikely to impose any new requirements on project proponents if critical habitat is designated in areas already subject to California Forest Practice Rules. Therefore, we believe this potential benefit of critical will be limited.

Benefits of Exclusion—The benefits of excluding from designated critical habitat the approximately 39 ac (16 ha) of lands currently managed under the HCP are substantial. We have developed a conservation partnership with Terra Springs through the development and implementation of the HCP.

Excluding the approximately 39 ac (16 ha) owned and managed by Terra Springs, LLC from critical habitat designation will sustain and enhance the working relationship between the Service and the company. The willingness of the company to work with the Service to manage federally listed species will continue to reinforce those conservation efforts and our partnership, which contribute toward achieving recovery of the northern spotted owl. We consider this voluntary partnership in conservation important in maintaining our ability to implement recovery actions, such as habitat protection and restoration, and beneficial management actions for species on non-Federal lands. The Service recognizes the importance of non-Federal landowners in contributing to the conservation and recovery of listed species, and seeks to maintain and promote these partnerships for the benefit of all threatened and endangered species.

We consider conservation partnerships with private landowners to represent an integral component of recovery for listed species. However, the designation of critical habitat could have an unintended negative effect on our relationship with non-Federal landowners due to the perceived imposition of redundant government regulation. If lands within the Terra Springs HCP are designated as critical habitat, it would likely have a chilling effect on our continued ability to seek new partnerships with future participants including States, counties, local jurisdictions, conservation organizations, and private landowners, which together can implement various conservation actions (such as SHAs, HCPs, and other conservation plans) that we would be unable to accomplish otherwise. We therefore consider the positive effect of excluding proven conservation partners from critical habitat to be a significant benefit of exclusion.

The Benefits of Exclusion Outweigh the Benefits of Inclusion—We reviewed and evaluated the exclusion of approximately 39 ac (16 ha) of land owned and managed by Terra Springs, LLC from our designation of critical habitat. The benefits of including these lands in the designation are relatively small. Because one of the primary threats to the northern spotted owl is habitat loss and degradation, the consultation process under section 7 of the Act for projects with a Federal nexus

in areas occupied by the species, such as is the case here, will, in evaluating effects to the northern spotted owl, evaluate the effects of the action on the conservation or function of the habitat for the species regardless of whether critical habitat is designated for these lands. The analytical requirements to support a jeopardy determination on excluded land are similar, but not identical, to the requirements in an analysis for an adverse modification determination on included land. However, the HCP provides habitat conservation measures that apply for the benefit of northern spotted owl, and remains in place regardless of critical habitat. These measures will not only prevent the degradation of essential features of the northern spotted owl, but will preserve some suitable northern spotted owl habitat in perpetuity.

We have determined that the preservation of our conservation partnership with Terra Springs, in conjunction with the conservation measures provided by the HCP, provide a greater benefit than would the regulatory and educational benefits of critical habitat designation. The additional regulatory benefits of designating critical habitat, afforded through the section 7(a)(2) consultation process, are minimal because there is little probability of a Federal nexus on these private lands. On the other hand, the conservation measures specifically benefitting the northern spotted owl and its habitat are in continuous effect throughout the lands covered by this HCP. Finally, the Service acknowledges the importance of conservation partnerships with private landowners in achieving the recovery of listed species, such as the northern spotted owl, and recognizes the positive benefits that accrue to conservation through the exclusion of recognized conservation partners from critical habitat. Therefore, in consideration of the factors discussed above in the *Benefits of Exclusion* section, including the relevant impact to current and future partnerships, we have determined that the benefits of exclusion of lands covered by the Terra Springs Habitat Conservation Plan outweigh the benefits of critical habitat designation.

Exclusion Will Not Result in Extinction of the Species—We have determined that the exclusion of 39 ac (16 ha) from the designation of critical habitat for the northern spotted owl of lands owned and managed by Terra Springs, LLC, as identified in their HCP, will not result in extinction of the species because current conservation efforts under the plan adequately protect the geographical areas containing the physical or biological features essential to the conservation of the species. For projects having a Federal nexus and affecting northern spotted owls in occupied areas, as is the case here, the jeopardy standard of section 7 of the Act, coupled with protection provided under the terms of the HCP would provide assurances that this species will not go extinct as a result of excluding these lands from the critical habitat designation. Based on the above discussion, the Secretary is exercising his discretion under section 4(b)(2) of the Act to exclude from this final critical habitat designation portions of the proposed critical habitat units or subunits that are within the Terra Springs, LLC Habitat Conservation Plan boundary totaling 76 ac (31 ha).

State of Oregon

No lands covered under an HCP in the State of Oregon are designated as critical habitat.

State of Washington

Cedar River Watershed Habitat Conservation Plan in King County, Washington

In this final designation, the Secretary has exercised his authority to exclude lands from critical habitat, under section 4(b)(2) of the Act, totaling approximately 3,244 ac (1,313 ha) that are covered under the Cedar River Watershed HCP (Cedar River HCP) in King County, Washington. The permit associated with this HCP was noticed in the **Federal Register** on December 11, 1998 (63 FR 68469), and issued on April 21, 2000. The term of the permit and HCP is 50 years. The plan was prepared to address declining populations of salmon, steelhead, bull trout, northern spotted owl, marbled murrelet, and 76 unlisted species of fish and wildlife in the Cedar River watershed. The City of Seattle's HCP covers 90,535 ac (36,368 ha) of City-owned land in the upper Cedar River watershed and the City's water supply and hydroelectric operations on the Cedar River, which flows into Lake Washington. Participants involved in the development and implementation of the Cedar River HCP include the City of Seattle, Seattle City Light, Seattle Public Utilities, Washington Department of Fish and Wildlife, Washington Department of Ecology, Muckelshoot Indian Tribe, King County, and several conservation-oriented nongovernmental organizations.

At the time the HCP was approved, the 90,535 ac (36,638 ha) in upper Cedar River Watershed, owned and managed by the City of Seattle as a closed-watershed, consisted of approximately 13,889 ac (5,620 ha) of old growth forest (190–800 years old), 91 ac (37 ha) of late-successional (120–189 years old), 1,074 ac (435 ha) of mature forests (80–119 years old), and 70,223 ac (28,418 ha) of second growth forests (greater than 80 years old). Conservation strategies in the HCP for covered lands are centered around protecting and preserving the remaining old growth, late-successional, and mature forest habitats; accelerating the development of mature forest characteristics in the existing second growth forests though a combination of riparian, ecological, and restoration thinnings; and minimizing human disturbance through road closures and road abandonments, elimination of commercial harvest on covered lands, and continued management of the covered lands as a closed municipal watershed.

At the time the HCP was approved, only two northern spotted owl reproductive site centers and two single-resident site centers had been identified on covered lands. In addition, two reproductive site enters located outside the watershed boundary had owl circles that partially overlap the Cedar River watershed. The boundaries of all known reproductive site centers are protected by the City of Seattle's commitment to conservation strategies and species-specific measures in the Cedar River HCP. The objectives of the northern spotted owl conservation strategy are to avoid, minimize, and mitigate impacts of watershed activities to northern spotted owls, provide a long-term net benefit to the northern spotted owl, and contribute to the owl's recovery. These objectives are to be accomplished by protecting existing habitat; enhancing and recruiting significantly more nesting, roosting, foraging, and dispersal habitat in the Cedar River watershed; and protecting nest sites, reproductive pairs, and their offspring from disturbances. In addition, the City of Seattle committed to implementing a monitoring and research program that will be used to help determine if the conservation strategies for the northern spotted owl achieve their conservation objectives and support the adaptive management program designed to provide a means by which conservation measures could be altered to meet these conservation objectives. Elements of the monitoring and research program important to northern spotted owls include a project to improve the City's forest habitat inventory and data base, a project to track changes in forest habitat characteristics, a study to classify old-growth types in the Cedar River

watershed, and projects to monitor all forest restoration efforts.

Benefits of Inclusion—We find that there is minimal benefit from designating critical habitat for the northern spotted owl within the Cedar River HCP because, as explained above, these covered lands are already managed for the conservation of the species over the term of the HCP. As discussed above, the inclusion of these covered lands as critical habitat could provide some additional Federal regulatory benefits for the species consistent with the conservation standard based on the Ninth Circuit Court's decision in Gifford Pinchot. A benefit of inclusion would be the requirement of a Federal agency to ensure that their actions on these non-Federal lands would not likely result in the destruction or adverse modification of critical habitat. However, this additional analysis to determine whether a Federal action is likely to result in destruction or adverse modification of critical habitat is not likely to be significant because these covered lands are not under Federal ownership making the application of section 7 less likely, and we are not aware of any other potential Federal nexus. In addition, any Federal agency proposing a Federal action on these covered lands would have to consider the conservation restrictions on these lands and incorporate measures necessary to ensure the conservation of these resources, thereby reducing any incremental benefit critical habitat may have.

The incremental benefit from designating critical habitat for the northern spotted owl within the Cedar River HCP is further minimized because, as explained above, these covered lands are already managed for the conservation of the species over the term of the HCP and the conservation measures provided by the HCP will provide greater protection to northern spotted owl habitat than the designation of critical habitat.

The Cedar River HCP provides for the needs of the northern spotted owl by protecting and preserving thousands of acres of existing suitable northern spotted owl habitat in the Cedar River watershed, committing to the enhancement and recruitment of approximately 70,000 ac (28,328 ha) of additional habitat over the term of the Cedar River HCP, and implementing species-specific conservation measures designed to avoid and minimize impacts to northern spotted owls. Monitoring and research and adaptive management programs were developed to track HCP progress over the term of the permit and provide critical feedback on management actions that allow for management changes in response to this feedback or to larger trends outside the HCP boundaries such as climate change. Therefore, designation of critical habitat would be redundant on these lands, and would not provide additional measureable protections.

Another benefit of including lands in a critical habitat designation is that it serves to educate landowners, State and local governments, and the public regarding the potential conservation value of an area. This helps focus and promote conservation efforts by other parties by identifying areas of high conservation value for northern spotted owls. Designation of critical habitat would inform State agencies and local governments about areas that could be conserved under State laws or local ordinances, such as the Washington State Growth Management Act, which encourage the protection of ''critical areas'' including fish and wildlife habitat conservation areas. Any information about the northern spotted owl and its habitat that reaches a wider audience, including parties engaged in conservation activities, is valuable. However, the additional educational and informational benefits that might arise from critical habitat designation here have been largely accomplished through the public review and comment of the HCP, Environmental Impact Statement, and Implementation Agreement. Through these processes, this HCP included intensive public involvement.

The designation of critical habitat may also indirectly cause State or county jurisdictions to initiate their own additional requirements in areas identified as critical habitat. These measures may include additional permitting requirements or a higher level of local review on proposed projects. However, in Washington, State forest practices regulations provide an exemption for review for lands managed under an HCP. Thus, even should the State respond to designation of critical habitat by instituting additional protections, the HCP will not be subject to those protections as the species is considered already addressed, and therefore no additional benefit would accrue through State regulations.

Benefits of Exclusion—Compared to the minimal benefits of inclusion of this area in critical habitat, the benefits of excluding from designated critical habitat the approximately 3,244 ac (1,313 ha) of lands currently managed under the HCP are more substantial.

HCP conservation measures that provide a benefit to the northern spotted owl and its habitat have been implemented continuously since 1998 on all covered lands owned and managed under the Cedar River HCP. Excluding the lands managed under the Cedar River HCP from critical habitat designation will sustain and enhance the working relationship between the Service and the permit holder.

Excluding lands within HCPs from critical habitat designation can also facilitate our ability to seek new partnerships with future HCP participants including States, counties, local jurisdictions, conservation organizations, and private landowners, which together can implement conservation actions that we would be unable to accomplish otherwise. If lands within HCP plan areas are designated as critical habitat, it would likely have a negative effect on our ability to establish new partnerships to develop HCPs, particularly large, regional HCPs that involve numerous participants and/or address landscape-level conservation of species and habitats. By excluding these lands, we preserve our current partnerships and encourage additional conservation actions in the future.

Benefits of Exclusion Outweigh the Benefits of Inclusion—In summary, we determine that the benefits of excluding the Cedar River HCP from the designation of critical habitat for the northern spotted owl outweigh the benefits of including this area in critical habitat. The regulatory and informational benefits of inclusion will be minimal. Because one of the primary threats to the northern spotted owl is habitat loss and degradation, the consultation process under section 7 of the Act for projects with a Federal nexus will, in evaluating effects to the northern spotted owl, evaluate the effects of the action on the conservation or functionality of the habitat for the species regardless of whether critical habitat is designated for these lands. The analytical requirements to support a jeopardy determination on excluded land are similar, but not identical, to the requirements in an analysis for an adverse modification determination on included land. However, the additional benefits of inclusion on the section 7 process are relatively unlikely because a Federal nexus on these relatively remote forest lands would rarely occur. If one were to occur, it would most likely be a linear project such as a powerline, pipeline, or transportation. In the last 12 years of the permit, none have occurred.

In addition, the management strategies of the Cedar River HCP are designed to protect and enhance habitat for the northern spotted owl. The Cedar River HCP includes species-specific

avoidance and minimization measures, monitoring requirements to track success and ensure proper implementation, and forest management practices and habitat conservation objectives that benefit the northern spotted owl and its habitat which further minimizes the benefits that would be provided as a result of a critical habitat designation.

On the other hand, the benefit of excluding these lands is that it will help us maintain an important and successful conservation partnership with a major city, and may encourage others to join in conservation partnerships as well. For these reasons, we have determined that the benefits of exclusion outweigh the benefits of inclusion in this case.

Exclusion Will Not Result in Extinction of the Species—We have determined that exclusion of approximately 3,244 ac (1,313 ha) of lands covered under the Cedar River HCP will not result in extinction of the northern spotted owl because the Cedar River HCP provides for the needs of the northern spotted owl by protecting and preserving thousands of acres of existing suitable northern spotted owl habitat in the Cedar River watershed, committing to the enhancement and recruitment of additional habitat over the term of the Cedar River HCP, and implementing species-specific conservation measures designed to avoid and minimize impacts to northern spotted owls. In addition, monitoring, research, and adaptive management programs were developed to track HCP progress and provide critical feedback on management actions that allow for management changes in response. Further, for projects having a Federal nexus and affecting northern spotted owls in occupied areas, the jeopardy standard of section 7 of the Act, coupled with protection provided by the Cedar River HCP, would provide a level of assurance that this species will not go extinct as a result of excluding these lands from the critical habitat designation. The species is also protected from take under section 9 of the Act. For these reasons we find that exclusion of these lands within the Cedar River HCP will not result in extinction of the northern spotted owl. Based on the above discussion, the Secretary is exercising his discretion under section 4(b)(2) of the Act to exclude from this final critical habitat designation portions of the proposed critical habitat units or subunits that are within the Cedar River Watershed HCP boundary totaling about 3,244 ac (1,313 ha).

Green River Water Supply Operations and Watershed Protection Habitat Conservation Plan

In this final designation, the Secretary has exercised his authority to exclude lands from critical habitat, under section 4(b)(2) of the Act, totaling approximately 3,162 ac (1,280 ha) that are covered under Tacoma Water's Green River Water Supply Operations and Watershed Protection HCP (Green River HCP) in the State of Washington. The permit associated with this HCP was noticed in the **Federal Register** on August 21, 1998 (63 FR 44918), and issued on July 6, 2001. The term of the permit and HCP is 50 years. The Green River HCP addresses upstream and downstream fish passage issues, flows in the middle and lower Green River, and timber and watershed-management activities on 15,843 ac (6,411 ha) of Tacoma-owned land in the upper Green River Watershed. The Green River HCP covers 32 species of fish and wildlife, including the northern spotted owl and 10 other listed species, under an agreement designed to allow the continuation of water-supply operations on the Green River, forest management practice in the upper Green River watershed, and aquatic restoration and enhancement activities. The plan also provides for fish passage into and out of the upper Green River Watershed.

The City of Tacoma manages approximately 15,843 ac (6,411 ha) of covered lands in the upper Green River watershed for water quality benefits and timber harvest. The Green River HCP divides Tacoma-owned lands into three distinct management zones, and contains a series of conservation measures that address upland forest management, riparian buffers, and avoid or minimize impacts to covered species. Each management zone has specific goals and objectives that focus on water quality, fish and wildlife, and timber management. The Natural Zone contains 5,850 ac (2,370 ha). In this zone, Tacoma is committed to conduct no timber harvest management except for danger tree removal. The long-term goal is to allow these timber stands to develop into late-seral (greater than 155 years old) and mature timber (106–155 years old) conditions through natural succession. The Conservation Zone contains 5,180 ac (2,080 ha) of covered lands. In this zone, Tacoma will conduct no even-aged harvest in conifer stands and no harvest of any form in stands over 100 years old (except for danger tree removal). Tacoma may conduct uneven-aged harvest in stands less than 100 years old to improve stand condition. Once stands reach 100 years of age, no timber harvest will be conducted and stands will be allowed to develop through natural succession. The Commercial Zone contains 3,858 ac (1,561 ha) of covered lands. Stands in this zone will be managed sustainably for timber production on a 70-year rotation. A considerable area of late-seral and mature forest capable of supporting nesting, roosting, foraging, and dispersal of northern spotted owls is expected to develop over time in the Natural Zone, Conservation Zone, and to a lesser extent, riparian buffers. Over the term of the permit, the amount of late-seral forest is expect to increase from 41 ac (17 ha) to 292 ac (118 ha), and the amount of mature forest is expected to increase from 268 ac (108 ha) to 4,027 ac (1,630 ha).

At the time the permit was approved, there were 16 known northern spotted owl activity centers within 1.8 miles of covered lands. Fifteen were reproductive site centers and one was a single-resident site center. Only the single-resident site center was actually located on covered lands. Species-specific conservation measures are designed to protect habitat around known nest sites and minimize disturbance during the nesting season.

Benefits of Inclusion—We find that there is minimal benefit from designating critical habitat for the northern spotted owl within the Green River HCP because, as explained above, these covered lands are already managed for the conservation of the species over the term of the HCP. As discussed above the inclusion of these covered lands as critical habitat could provide some additional Federal regulatory benefits for the species consistent with the conservation standard based on the Ninth Circuit Court's decision in *Gifford Pinchot.* A benefit of inclusion would be the requirement of a Federal agency to ensure that their actions on these non-Federal lands would not likely result in the destruction or adverse modification of critical habitat. However, this additional analysis to determine whether a Federal action is likely to result in the destruction or adverse modification of critical habitat is not likely to be significant not only because a Federal nexus is unlikely (these covered lands are not under Federal ownership), any Federal agency proposing a Federal action on these covered lands would likely consider the conservation value of these lands and take the necessary steps to avoid adverse effects to northern spotted owl habitat. If a Federal nexus did occur, it would most likely be in the context of a linear project such as a powerline,

pipeline, or transportation project. In the last 11 years of the permit, none have occurred.

Another factor that minimizes any regulatory benefits that might result from critical habitat designation is that the Green River HCP already provides for the needs of the northern spotted owl by protecting and preserving acres of existing suitable northern spotted owl habitat in the Green River watershed, committing to the enhancement and recruitment of additional area of suitable habitat over the term of the Green River HCP, and implementing species-specific conservation measures designed to avoid and minimize impacts to northern spotted owls. Monitoring was developed to track HCP progress over the term of the permit and provide critical feedback on management actions, which allow for management changes in response to this feedback or to larger trends outside the HCP boundaries such as climate change. Therefore, designation of critical habitat would be redundant on these lands, and would not provide additional measurable protections.

Another benefit of including lands in a critical habitat designation is that it serves to educate landowners, State and local governments, and the public regarding the potential conservation value of an area. This helps focus and promote conservation efforts by other parties by identifying areas of high conservation value for northern spotted owls. Designation of critical habitat would inform State agencies and local governments about areas that could be conserved under State laws or local ordinances, such as the Washington State Growth Management Act, which encourage the protection of ''critical areas'' including fish and wildlife habitat conservation areas. Any information about the northern spotted owl and its habitat that reaches a wider audience, including parties engaged in conservation activities, is valuable. However, the additional educational and informational benefits that might arise from critical habitat designation here have been largely accomplished through the public review and comment on the HCP, Environmental Impact Statement, and Implementation Agreement.

The designation of critical habitat may also indirectly cause State or county jurisdictions to initiate their own additional requirements in areas identified as critical habitat. These measures may include additional permitting requirements or a higher level of local review on proposed projects. However, in Washington, State forest practices regulations provide an exemption for review for lands managed under an HCP. Thus, even should the State respond to designation of critical habitat by instituting additional protections, the HCP will not be subject to those protections as the species is considered already addressed, and therefore no additional benefit would accrue through State regulations.

Benefits of Exclusion—The benefits of excluding from designated critical habitat the approximately 3,162 ac (1,280 ha) of lands currently managed under the HCP are substantial. HCP conservation measures that provide a benefit to the northern spotted owl and its habitat have been implemented continuously since 2001 on all covered lands owned and managed under the Green River HCP. Excluding the lands managed under the Green River HCP from critical habitat designation will sustain and enhance the working relationship between the Service and the permit holder.

Excluding lands within HCPs from critical habitat designation may also support our continued ability to seek new partnerships with future HCP participants including States, counties, local jurisdictions, conservation organizations, and private landowners, which together can implement conservation actions that we would be unable to accomplish otherwise. If lands within HCP plan areas are designated as critical habitat, it would likely have a negative effect on our ability to establish new partnerships to develop HCPs, particularly HCPs address landscape-level conservation of species and habitats. By excluding these lands, we preserve our current partnerships and encourage additional conservation actions in the future.

Benefits of Exclusion Outweigh the Benefits of Inclusion—In summary, we determine that the benefits of excluding the Green River HCP from the designation of critical habitat for the northern spotted owl outweigh the benefits of including this area in critical habitat. The regulatory and informational benefits of inclusion will be minimal. Because one of the primary threats to the northern spotted owl is habitat loss and degradation, the consultation process under section 7 of the Act for projects with a Federal nexus will, in evaluating effects to the northern spotted owl, evaluate the effects of the action on the conservation or functionality of the habitat for the species regardless of whether critical habitat is designated for these lands. The analytical requirements to support a jeopardy determination on excluded land are similar, but not identical, to the requirements in an analysis for an adverse modification determination on included land. However, any benefits from the section 7 process are unlikely because Federal projects would be rare on these relatively remote forest lands. The regulatory benefits of inclusion are even more minimal in light of the fact that the Green River HCP includes species-specific avoidance and minimization measures, monitoring requirements to track success and ensure proper implementation, and forest management practices and habitat conservation objectives that benefit the northern spotted owl and its habitat, which exceeds any conservation value provided as a result of a critical habitat designation. On the other hand, the benefit of excluding these lands is that it will help us maintain an important and successful conservation partnership with a major city, and may encourage others to join in conservation partnerships as well. Therefore, we find that the benefits of exclusion of the lands covered by Green River HCP outweigh the benefits of inclusion.

Exclusion Will Not Result in Extinction of the Species—We have determined that exclusion of approximately 3,162 ac (1,280 ha) of lands covered under the Green River HCP will not result in extinction of the northern spotted owl because the Green River HCP provides for the needs of the northern spotted owl by protecting and preserving acres of existing suitable northern spotted owl habitat in the Green River watershed, committing to the enhancement and recruitment of additional area of suitable habitat over the term of the Green River HCP, and implementing species-specific conservation measures designed to avoid and minimize impacts to northern spotted owls. Monitoring was developed to track HCP progress over the term of the permit and provide critical feedback on management actions, which allow for management changes in response to this feedback or to larger trends outside the HCP boundaries such as climate change. The conservation measures provided by this HCP have been implemented continuously since 1998 on all covered lands owned and managed under the Green River HCP. Further, for projects having a Federal nexus and affecting northern spotted owls in occupied areas, the jeopardy standard of section 7 of the Act, coupled with protection provided by the Green River HCP, would provide a level of assurance that this species will not go extinct as a result of excluding these lands from the critical habitat designation. The species is also protected by ESA section 9, which prohibits the take of listed

species. For these reasons, we find that exclusion of these lands within the Green River HCP will not result in extinction of the northern spotted owl. Based on the above discussion, the Secretary is exercising his discretion under section 4(b)(2) of the Act to exclude from this final critical habitat designation portions of the proposed critical habitat units or subunits that are within the Green River HCP boundary totaling about 3,162 ac (1,280 ha).

Plum Creek Timber Central Cascades Habitat Conservation Plan

In this final designation, the Secretary has exercised his authority to exclude lands from critical habitat, under section 4(b)(2) of the Act, totaling about 33,144 ac (13,413 ha) that are covered under the Plum Creek Timber Central Cascades HCP (Plum Creek HCP) in the State of Washington. The permit associated with the Plum Creek HCP was first noticed in the **Federal Register** on November 17, 1995 (60 FR 57722), issued on June 27, 1996, and later modified in December of 1999 as noticed on February 10, 2000 (65 FR 6590). The permit has a term of 50 years (with an option to extend to 100 years if certain conditions are met) and currently covers 84,600 ac (34,236 ha) of lands in the Interstate-90 corridor in King and Kittitas Counties, Washington. The HCP includes over 315 species of fish and wildlife, including the northern spotted owl and 7 other listed species. The plan addresses forest-management activities across an area of industrial timberlands in Washington's central Cascade Mountains, and provides for management of the northern spotted owl based on landscape conditions tailored to the guidelines provided by the NWFP by providing additional protection to northern spotted owl sites near late-successional reserves. Wildlife trees are retained in buffers of natural features (e.g., caves, wetlands, springs, cliffs, talus slopes) and streams, as well as scattered and clumped within harvest units. The HCP also requires Plum Creek to maintain and grow nesting, roosting, and foraging habitat as well as habitat that can be used for foraging and dispersal. They are also required to provide forests of various structural stages across all of their HCP ownerships. This commitment of owl habitat and forest stages, in combination with wildlife trees retained within harvest units and stream and landscape-feature buffers will provide a matrix of habitat conditions that complements the owl habitat provided in the Plum Creek HCP and nearby LSRs. Stands containing scattered leave trees following harvest will be expected to become more valuable for northern spotted owls at earlier ages than those harvested using previous methods.

At the time the permit was approved, there were 107 known northern spotted owl activity centers within 1.82 miles of covered lands, which included reproductive site centers, single-resident site centers, and historic sites. A detailed description of each sites history is provided in the HCP and associated technical papers.

Benefits of Inclusion—We find there are minimal benefits to including these lands in critical habitat. As discussed above, the designation of critical habitat invokes the provisions of section 7. However, in this case, we find the requirement that Federal agencies consult with us and ensure that their actions are not likely to destroy or adversely modify critical habitat will not result in significant benefits to the species because the possibility of a Federal nexus for a project on these lands is small unless it is a larger project covering adjacent Federal lands as well, in which case section 7 consultation would already be triggered and the Federal agency would consider the effects of its actions on the species. In addition, although the standards of jeopardy and adverse modification are different, the margin of conservation that could be attained through section 7 would not be significant in light of the benefits already derived from the HCP.

HCPs typically provide for greater conservation benefits to a covered species than section 7 consultations because HCPs ensure the long-term protection and management of a covered species and its habitat. In addition, funding for such management is ensured through the Implementation Agreement. Such assurances are typically not provided by section 7 consultations, which in contrast to HCPs, often do not commit the project proponent to long-term, special management practices or protections. Thus, a section 7 consultation typically does not afford the lands it covers similar extensive benefits as a HCP. The development and implementation of HCPs provide other important conservation benefits, including the development of biological information to guide the conservation efforts and assist in species conservation, and the creation of innovative solutions to conserve species while meeting the needs of the applicant. In this case, substantial information has been developed from the research, monitoring, and surveys conducted under the Plum Creek HCP.

There is minimal incremental benefit from designating critical habitat for the northern spotted owl within the Plum Creek HCP because, as explained above, these covered lands are already managed for the conservation of the species over the term of the HCP and the conservation measures provided by the HCP will provide greater protection to northern spotted owl habitat than the designation of critical habitat, which provides regulatory protections only in the event of a Federal action. The Plum Creek HCP provides for the needs of the northern spotted owl by protecting and preserving landscape levels of suitable northern spotted owl nesting, roosting, and foraging habitat as well as foraging and dispersal habitat over the term of the HCP in strategic landscapes, and implementing species-specific conservation measures designed to avoid and minimize effects to northern spotted owls. The HCP also provides for the ability to make ongoing adjustments in a number of forms including active adaptive forest management. The ability to change is crucial to meet new recovery challenges. The Service negotiated this plan with Plum Creek, which contains mandatory permit conditions in the form of HCP commitments, and continues to be involved in its ongoing implementation. The Service conducts compliance monitoring on the covered lands and routinely meets with Plum Creek to discuss ongoing implementation. The HCP contains provisions that address ownership changes and the outcomes expected by the Service. Monitoring was developed to track HCP progress over the term of the permit and provide feedback on management actions. Therefore, designation of critical habitat would be redundant on these lands, and would not provide additional measureable protections.

Another benefit of including lands in a critical habitat designation is that it serves to educate landowners, State and local governments, and the public regarding the potential conservation value of an area. This helps focus and promote conservation efforts by other parties by identifying areas of high conservation value for northern spotted owls. Designation of critical habitat would inform State agencies and local governments about areas that could be conserved under State laws or local ordinances, such as the Washington State Growth Management Act, which encourage the protection of ''critical areas'' including fish and wildlife habitat conservation areas. Any information about the northern spotted owl and its habitat that reaches a wider audience, including parties engaged in conservation activities, is valuable.

However, Plum Creek is knowledgeable about the northern spotted owl and the company has made substantial contributions in research and science for the species. The additional educational and informational benefits that might arise from critical habitat designation here have been largely accomplished through the public review and comment of the HCP, Environmental Impact Statement, and Implementation Agreement, as well as the supplemental Environmental Impact Statements associated with the modification of the HCP and the I–90 Land Exchange. Through these processes, this HCP included intensive public involvement. This HCP continues to receive a high degree of scrutiny and study by academics, as well as informational releases to the general public and has resulted in improved understanding by the public. This level of exposure in local newspapers and television stations exceeds the level of education that would come from a designation that would be read by few people in the public. Moreover, the rulemaking process associated with critical habitat designation includes several opportunities for public comment, and thus also provides for public education. Through these outreach opportunities, land owners, State agencies, and local governments have become more aware of the status of and threats to the northern spotted owl and the conservation actions needed for recovery.

The designation of critical habitat may also indirectly cause State or county jurisdictions to initiate their own additional requirements in areas identified as critical habitat. These measures may include additional permitting requirements or a higher level of local review on proposed projects. However, in Washington, State forest practices regulations provide an exemption for review for lands managed under an HCP. Thus, even should the State respond to designation of critical habitat by instituting additional protections, the HCP will not be subject to those protections as the species is considered already addressed, and therefore no additional benefit would accrue through State regulations.

Benefits of Exclusion—The benefits of excluding from designated critical habitat the approximately 33,144 ac (13,413 ha) of lands currently managed under the HCP are more substantial. The designation of critical habitat could have an unintended negative effect on our relationship with non-Federal landowners due to the perceived imposition of redundant government regulation. If lands within the Plum Creek HCP area are designated as critical habitat, it would likely have a negative effect on our continued ability to seek new partnerships with future participants including States, counties, local jurisdictions, conservation organizations, and private landowners, which together can implement conservation actions (such as SHAs, HCPs, and other conservation plans, particularly those that address landscape-level conservation of species and habitats) that we would be unable to accomplish otherwise. This HCP is currently serving as a model for ongoing and future efforts. Due to the high level of visibility in the Interstate-90 corridor and the overlap with recreational lands used by many residents of the Seattle metropolitan area, this HCP received an unusual amount of scrutiny. Because it was one of the first HCPs to address species using a habitat-based approach, it set a high standard for application of the best available science. Plum Creek has been a long-standing partner and advocate for HCPs across the nation. They are viewed as leaders in their industry and as an example in the HCP community. By excluding these lands, we preserve our current private and local conservation partnerships and encourage additional conservation actions in the future.

In addition, exclusion may encourage Plum Creek to engage in further land exchanges or sales of their lands for conservation purposes. This HCP is located in a key landscape between the I–90 and other Federal lands and represents a unique opportunity in maintaining northern spotted owls at the western extreme of the Cascades, which may support dispersal between the Cascades. This HCP contributes meaningfully to the recovery of the northern spotted owl and serves as an example to other industrial companies. Since issuance of the Plum Creek HCP, Plum Creek's ownership has decreased from about 170,000 ac (68,797 ha) to about 81,000 ac (32,780 ha). This decrease is mostly due to land exchanges and sales by Plum Creek for conservation purposes. Conservation sales have been completed on a number of sensitive sites. Plum Creek has worked to find conservation buyers and has responded to requests from agencies and conservation groups. They have sold lands to a various parties using differing funding mechanisms, but sold lands have been transferred to public ownership, primarily the U.S. Forest Service. All of these lands have been placed in conservation status. If lands within the Plum Creek HCP plan areas are designated as critical habitat, it would likely have a negative effect on the willingness of various groups and funding sources to accomplish these conservation sales, and could also negatively affect Plum Creek's willingness to participate in these acquisition processes.

Benefits of Exclusion Outweigh the Benefits of Inclusion—The benefits of including these lands in the designation are small. Because one of the primary threats to the northern spotted owl is habitat loss and degradation, the consultation process under section 7 of the Act for projects with a Federal nexus will, in evaluating effects to the northern spotted owl, evaluate the effects of the action on the conservation or functionality of the habitat for the species regardless of whether critical habitat is designated for these lands. The analytical requirements to support a jeopardy determination on excluded land are similar, but not identical, to the requirements in an analysis for an adverse modification determination on included land. However, the HCP contains provisions for protecting and maintaining northern spotted owl habitat that far exceed the conservation benefits afforded through section 7 consultation. It provides for comprehensive measures applied across a large landscape that will benefit spotted owls. Plum Creek personnel are knowledgeable in the ecology of the northern spotted owl and have contributed to the body of scientific information about the northern spotted owl. In this instance, the regulatory and educational reasons for inclusion have much less benefit than the continued benefit of the HCP, including the educational benefits derived from the HCP.

On the other hand, the benefits of exclusion will continue the positive relationship we currently have with Plum Creek and encourage others to engage in conservation partnerships such as HCPs as well. For these reasons, we determine that the benefits of excluding the Plum Creek Cascades HCP from the designation of critical habitat for the northern spotted owl outweigh the benefits of including this area in critical habitat.

Exclusion Will Not Result in Extinction of the Species—We have determined that exclusion of approximately 33,144 ac (13,413 ha) of lands covered under the Plum Creek HCP will not result in extinction of the northern spotted owl because the Plum Creek HCP provides for the needs of the northern spotted owl by protecting and preserving landscape levels of suitable northern spotted owl nesting, roosting,

and foraging habitat as well as foraging and dispersal habitat over the term of the HCP in strategic landscapes, and implementing species-specific conservation measures designed to avoid and minimize effects to northern spotted owls. Monitoring was developed to track HCP progress over the term of the permit and provide feedback on management actions. The Plum Creek HCP provides for the ability to make ongoing adjustments in a number of forms, including active adaptive forest management. The ability to change is crucial to meet new recovery challenges. The HCP contains provisions that address ownership changes and the outcomes expected by the Service. Further, for projects having a Federal nexus and affecting northern spotted owls in occupied areas, the jeopardy standard of section 7 of the Act, coupled with protection provided by the Plum Creek HCP, would provide a level of assurance that this species will not go extinct as a result of excluding these lands from the critical habitat designation. We find that exclusion of these lands within the Plum Creek HCP will not result in extinction of the northern spotted owl. Based on the above discussion, the Secretary is exercising his discretion under section 4(b)(2) of the Act to exclude from this final critical habitat designation portions of the proposed critical habitat units or subunits that are within the Plum Creek HCP boundary totaling about 33,144 ac (13,413 ha).

Washington State Department of Natural Resources State Lands Habitat Conservation Plan

Washington State lands totaling approximately 225,751 ac (91,358 ha) that are covered and managed under the Washington State Department of Natural Resources State Lands Habitat Conservation Plan (WDNR HCP), are excluded from this critical habitat designation under section 4(b)(2) of the Act. The WDNR HCP covers approximately 1.7 million ac (730,000 ha) of State forest lands within the range of the northern spotted owl in the State of Washington. The majority of the area covered by the HCP is west of the Cascade Crest and includes the Olympic Experimental State Forest. The HCP area on the east side of the Cascade Range includes lands within the range of the northern spotted owl. The permit associated with this HCP, issued January 30, 1997, was noticed in the **Federal Register** on April 5, 1996 (61 FR 15297), has a term of 70 to 100 years, and covers activities primarily associated with commercial forest management, but also includes limited nontimber activities such as some recreational activities. The HCP covers all species, including the northern spotted owl and other listed species.

The HCP addressed multiple species through a combination of strategies. The HCP includes a series of Natural Area Preserves and Natural Resource Conservation Areas. The marbled murrelet is addressed through a combination of steps culminating in the development of a long-term plan to retain and protect important old-forest habitat, which will also benefit the northern spotted owl. Riparian conservation includes buffers on fish-bearing streams as well as substantial buffers on streams and wetlands without fish, and deferring harvest on unstable slopes. Wildlife trees are retained in buffers of natural features (e.g., caves, wetlands, springs, cliffs, talus slopes) and streams, as well as scattered and clumped within harvest units. The HCP also requires WDNR to maintain and grow forests of various structural stages across all of their HCP ownerships. Specifically for northern spotted owls, they have identified portions of the landscape upon which they will manage for nesting, roosting, and foraging (NRF) habitat for northern spotted owls. These areas are known as NRF Management Areas (NRFMAs) and were located to provide demographic support that would strategically complement the NWFP's Late-Successional Reserves as well as those Adaptive Management Areas that have late-successional objectives. The NRFMAs also were situated to help maintain species distribution. Generally, these NRFMAs will be managed so that approximately 50 percent of those lands will develop into NRF habitat for the northern spotted owl over time. Within this 50 percent, certain nest patches containing high-quality nesting habitat are to be retained and grown. Since the HCP was implemented, within the NRFMAs, WDNR has carried out 5,100 ac (2,064 ha) of pre-commercial thinning and 7,800 ac (3,156 ha) of timber harvest specifically configured to enhance northern spotted owl habitat. WDNR's habitat-enhancement activities will continue under the HCP.

Some areas outside of the NRFMAs are managed to provide for dispersal and foraging conditions in 50 percent of the forests in those areas; these were strategically located in landscapes important for connectivity. The Olympic Experimental State Forest is managed to provide for northern spotted owl conservation across all of its lands. Even in areas not specifically managed for northern spotted owls, WDNR has committed to providing a range of forest stages across the landscape to address multiple species. This commitment of forest stages, in combination with wildlife trees retained within harvest units and stream and landscape-feature buffers, will provide a matrix of habitat conditions that will also provide some assistance in conserving northern spotted owls. Stands containing scattered leave trees following harvest will become more valuable for northern spotted owls at earlier ages than those stands harvested using previous methods. Northern Spotted owls across the WDNR HCP are expected to benefit from the combination of these strategies.

At the time the permit was approved, there were approximately 292 northern spotted owl site centers overlapping on WDNR covered lands, including 76 known site centers (excluding historic sites and non-territorial singles). There were approximately 484,717 ac (196,158 ha) of suitable habitat on covered lands, which comprised over 10 percent of all suitable habitat in Washington State at that time.

Benefits of Inclusion—We find there are minimal benefits to including these lands in critical habitat. As discussed above, the designation of critical habitat invokes the provisions of section 7. However, in this case, we find the requirement that Federal agencies consult with us and ensure that their actions are not likely to destroy or adversely modify critical habitat will not result in significant benefits to the species because the possibility of a Federal nexus for a project on these lands is small unless it is a larger project covering adjacent Federal lands as well, in which case section 7 consultation would already be triggered and the Federal agency would consider the effects of its actions on the species. In addition, although the standards of jeopardy and adverse modification are different, in this case, the benefits of applying the latter standard would be minimal in light of the benefits already derived from the HCP.

HCPs typically provide for greater conservation benefits to a covered species than section 7 consultations because HCPs ensure the long-term protection and management of a covered species and its habitat. Funding for such management is ensured through the Implementation Agreement. Such assurances are typically not provided by section 7 consultations, which in contrast to HCPs, often do not commit the project proponent to long-term, special management practices or protections. Thus, a section 7 consultation typically does not afford the lands the same benefits as a HCP.

The development and implementation of HCPs provide other important conservation benefits, including the development of biological information to guide the conservation efforts and assist in species conservation, and the creation of innovative solutions to conserve species while meeting the needs of the applicant. In this case, substantial information has been developed from the research, monitoring, and surveys conducted under the WDNR HCP.

There is minimal incremental benefit from designating critical habitat for the northern spotted owl within the WDNR HCP because, as explained above, these covered lands are already managed for the conservation of the species over the term of the HCP and the conservation measures provided by the HCP will provide greater protection to northern spotted owl habitat than the designation of critical habitat, which provides regulatory protections only in the event of a Federal action. The WDNR HCP provides for the needs of the northern spotted owl by protecting and preserving landscape levels of suitable northern spotted owl nesting, roosting, and foraging habitat as well as foraging and dispersal habitat over the term of the HCP in strategic landscapes, and implementing species-specific conservation measures designed to avoid and minimize effects to northern spotted owls. The HCP also provides for the ability to make ongoing adjustments in a number of forms, including active adaptive forest management. The ability to change is crucial to meet new recovery challenges. The Service continues to be involved in the implementation of this HCP. The Service conducts compliance monitoring on the covered lands and routinely meets with WDNR to discuss ongoing implementation. The HCP contains provisions that address ownership changes and the outcomes expected by the Service. Monitoring was developed to track HCP progress over the term of the permit and provide feedback on management actions. Therefore, designation of critical habitat would be redundant on these lands, and would not provide additional measureable protections.

Another benefit of including lands in a critical habitat designation is that it serves to educate landowners, State and local governments, and the public regarding the potential conservation value of an area. This helps focus and promote conservation efforts by other parties by identifying areas of high conservation value for northern spotted owls. Designation of critical habitat would inform State agencies and local governments about areas that could be conserved under State laws or local ordinances, such as the Washington State Growth Management Act, which encourage the protection of ''critical areas'' including fish and wildlife habitat conservation areas. Any information about the northern spotted owl and its habitat that reaches a wider audience, including parties engaged in conservation activities, is valuable. However, WDNR, as the State's natural resource agency, is knowledgeable about the species and has made substantial contributions to our knowledge of the species. In addition the additional educational and informational benefits that might arise from critical habitat designation here have been largely accomplished through the public review and comment of the HCP, Environmental Impact Statement, and Implementation Agreement, as well as the supplemental Environmental Impact Statements associated with the modification of the HCP. This HCP included intensive public involvement and continues to be an example used when discussing HCPs. The HCP is frequently a topic of open and public discussion during meetings of the Washington State Board of Natural Resources, whose meetings are open to the public and frequently televised. This level of exposure in local newspapers and television stations exceeds the level of education that would come from a designation that would be read by few people in the public. Moreover, the rulemaking process associated with critical habitat designation includes several opportunities for public comment, and thus also provides for public education.

Benefits of Exclusion—A benefit of excluding lands within this HCP from critical habitat designation is that it would encourage the State and other parties to continue to work for owl conservation. Since issuance of this HCP, a number of land transactions and land exchanges with the HCP area have occurred. These transactions have included creation of additional Natural Resource Conservation Areas and Natural Area Preserves (both land designations with high degree of protection) and have also included large land exchanges and purchases that have changed the footprint of the HCP. These land-based adjustments have facilitated better management on many important parcels and across larger landscapes than would otherwise have been possible. If lands within HCP plan areas are designated as critical habitat, it would likely have a negative effect on the willingness of various groups and funding sources to accomplish these land-ownership adjustments because of a reluctance to acquire lands designated as critical habitat as well as a reduced willingness on the part of WDNR to accommodate the Services goals. This HCP is located in key landscapes across the State and contributes meaningfully to the recovery of the northern spotted owl.

If lands within the WDNR HCP plan area are designated as critical habitat, it would also likely have a negative effect on our ability to establish new partnerships to develop HCPs, particularly large, regional HCPs that involve numerous participants and/or address landscape-level conservation of species and habitats. This HCP has served as a model for several completed and ongoing HCP efforts, including the Washington State Forest Practices HCP. By excluding these lands, we preserve our current private and local conservation partnerships and encourage additional conservation actions in the future because other parties see our exclusion as a sign that the Service will not impose duplicative regulatory burdens on landowners who have developed an HCP.

HCPs typically provide for greater conservation benefits to a covered species than section 7 consultations because HCPs ensure the long-term protection and management of a covered species and its habitat. In addition, funding for such management is ensured through the Implementation Agreement. Such assurances are typically not provided by section 7 consultations, which in contrast to HCPs often do not commit the project proponent to long-term, special management practices or protections. Thus, a section 7 consultation typically does not afford the lands it covers similar extensive benefits as an HCP. The development and implementation of HCPs provide other important conservation benefits, including the development of biological information to guide the conservation efforts and assist in species conservation, and the creation of innovative solutions to conserve species while meeting the needs of the applicant. In this case, substantial information has been developed from the research, monitoring, and surveys conducted under the WDNR HCP. Therefore, exclusion is a benefit because it maintains and fosters development of biological information and innovative solutions.

Benefits of Exclusion Outweigh the Benefits of Inclusion—The benefits of including these lands in the designation are small. Because one of the primary

threats to the northern spotted owl is habitat loss and degradation, the consultation process under section 7 of the Act for projects with a Federal nexus will, in evaluating effects to the northern spotted owl, evaluate the effects of the action on the conservation or functionality of the habitat for the species regardless of whether critical habitat is designated for these lands. The analytical requirements to support a jeopardy determination on excluded land are similar, but not identical, to the requirements in an analysis for an adverse modification determination on included land. However, the HCP contains provisions for protecting and maintaining northern spotted owl habitat that far exceed the conservation benefits afforded through section 7 consultation. It provides for comprehensive measures applied across a large landscape that will benefit spotted owls. Washington State DNR personnel are extremely knowledgeable regarding the ecology of the northern spotted owl and have contributed to the body of scientific information about the northern spotted owl. In this instance, the regulatory and educational benefits of inclusion have much less benefit than the continued benefit of the HCP including the educational benefits derived from the HCP.

The WDNR HCP provides for significant conservation and management within geographical areas that contain the physical or biological features essential to the conservation of the northern spotted owl and help achieve recovery of this species through the conservation measures of the HCP. Exclusion of these lands from critical habitat will help foster the partnership we have developed with WDNR, through the development and continuing implementation of the HCP. Furthermore, this partnership may aid in fostering future cooperative relationships with other parties in other locations for the benefit of listed species.

For these reasons, we determine that the benefits of excluding the WDNR HCP from the designation of critical habitat for the northern spotted owl outweigh the benefits of including this area in critical habitat.

Exclusion Will Not Result in Extinction of the Species—We have determined that exclusion of approximately 225,751 ac (91,358 ha) of lands covered under the WDNR HCP will not result in extinction of the northern spotted owl. The WDNR HCP protects and preserves landscape levels of suitable northern spotted owl nesting, roosting, and foraging habitat as well as foraging and dispersal habitat over the term of the HCP in strategic landscapes, and implements species-specific conservation measures designed to avoid and minimize effects to northern spotted owls. Monitoring was developed to track HCP progress over the term of the permit and provide critical feedback on management actions. Adaptive management provides for responses to this feedback. Further, for projects having a Federal nexus and affecting northern spotted owls in occupied areas, the jeopardy standard of section 7 of the Act, coupled with protection provided by the WDNR HCP, would provide a level of assurance that this species will not go extinct as a result of excluding these lands from the critical habitat designation. We find that exclusion of these lands within the WDNR HCP will not result in extinction of the northern spotted owl. Based on the above discussion, the Secretary is exercising his discretion under section 4(b)(2) of the Act to exclude from this final critical habitat designation portions of the proposed critical habitat units or subunits that are within the WDNR HCP totaling about 225,751 ac (91,358 ha).

West Fork Timber Habitat Conservation Plan

The Service has excluded approximately 5,105 ac (2,066 ha) of lands from final critical habitat designation, under section 4(b)(2) of the Act, that are covered under the West Fork Timber HCP (West Fork HCP) (formerly known as Murray Pacific Corporation) in the West Cascades Central CHU in Washington. The West Fork HCP was the first multispecies HCP on forested lands in the Nation. The permit associated with the West Fork HCP has a term of 100 years and was first issued on September 24, 1993; amended on June 26, 1995; and amended again on October 16, 2001 (66 FR 52638). The HCP includes 53,558 ac (21,674 ha) of commercial timber lands managed as a tree farm in Lewis County, Washington. The HCP is situated between an area of Federal land known as the Mineral Block and the larger block of Federal lands in the Cascades. The HCP was first developed to allow for forest-management activities and provide for the conservation of the northern spotted owl; the amended HCP provides for all species, including six listed species. The HCP is designed to develop and maintain northern spotted owl dispersal habitat across 43 percent of the tree farm, and must also meet quantitative measures of amount and distribution. As a result, total dispersal habitat will more than double in amount, and wide gaps between stands of dispersal habitat will be decreased.

In addition, the West Fork HCP provides for leaving at least 10 percent of the tree farm in reserves for the next 100 years. These reserves will primarily take the form of riparian buffers averaging at least 100 feet (30 m) on each side of all fish-bearing streams, as well as other buffers and set-a-side areas. Other provisions of the HCP are designed to ensure that all forest habitat types and age classes currently on the tree farm, as well as special habitat types such as talus slopes, caves, nest trees, and den sites, are protected or enhanced. Seasonal protection is provided within ¼ mile of an active northern spotted owl nest site.

At the time the permit was approved, there were approximately 4,678 ac (1,893 ha) of suitable habitat in small stands sporadically located, comprising about 8 percent of the ownership. The HCP included 3 resident northern spotted owls and included about 20 percent of the ownership in dispersal habitat.

Benefits of Inclusion—We find there are minimal benefits to including these lands in critical habitat. As discussed above, the designation of critical habitat invokes the provisions of section 7. However, in this case, we find the requirement that Federal agencies consult with us and ensure that their actions are not likely to destroy or adversely modify critical habitat will not result in significant benefits to the species because the possibility of a Federal nexus for a project on these lands is small unless it was a larger project covering adjacent Federal lands as well, in which case section 7 consultation would already be triggered and the Federal agency would consider the effects of its actions on the species. In addition, although the standards for jeopardy and adverse modification are not the same, the benefits of the section 7 prohibition on adverse modification would be minimal in light of the benefits already derived from the HCP.

HCPs typically provide for greater conservation benefits to a covered species than section 7 consultations because HCPs ensure the long-term protection and management of a covered species and its habitat. In addition, funding for such management is ensured through the Implementation Agreement. Such assurances are typically not provided by section 7 consultations, which, in contrast to HCPs, usually do not commit the project proponent to long-term, special management practices or protections. Thus, a section 7 consultation typically does not afford the lands it covers

benefits similar to those provided by an HCP. The development and implementation of HCPs provide other important conservation benefits, including the development of biological information to guide the conservation efforts and assist in species conservation, and the creation of innovative solutions to conserve species while meeting the needs of the applicant.

There is minimal incremental benefit from designating critical habitat for the northern spotted owl within the West Fork HCP because, as explained above, these covered lands are already managed for the conservation of the species over the term of the HCP and the conservation measures provided by the HCP will provide greater protection to northern spotted owl habitat than the designation of critical habitat, which provides regulatory protections only in the event of a Federal action. The West Fork HCP provides for the needs of the northern spotted owl by protecting and preserving landscape levels of suitable northern spotted owl dispersal habitat over the term of the HCP in strategic landscapes, and implementing species-specific conservation measures designed to avoid and minimize effects to northern spotted owls. The HCP also provides for the ability to make ongoing adjustments in a number of forms, including active adaptive forest management. The ability to change is crucial to meet new recovery challenges. The Service continues to be involved in implementation of the HCP. It contains provisions that address ownership changes and the outcomes expected by the Service. Monitoring was developed to track HCP progress over the term of the permit and provide feedback on management actions. Therefore, designation of critical habitat would be redundant on these lands, and would not provide additional measureable protections.

Another benefit of including lands in a critical habitat designation is that it serves to educate landowners, State and local governments, and the public regarding the potential conservation value of an area. This helps focus and promote conservation efforts by other parties by identifying areas of high conservation value for northern spotted owls. Designation of critical habitat would inform State agencies and local governments about areas that could be conserved under State laws or local ordinances, such as the Washington State Growth Management Act, which encourage the protection of ''critical areas'' including fish and wildlife habitat conservation areas. Any information about the northern spotted owl and its habitat that reaches a wider audience, including parties engaged in conservation activities, is valuable. However, this landowner is knowledgeable about the species through its implementation of the HCP. In addition the additional educational and informational benefits that might arise from critical habitat designation here have been largely accomplished through the public review and comment of the HCP, Environmental Impact Statement, and Implementation Agreement. Through these processes, this HCP included intensive public involvement. Moreover, the rulemaking process associated with critical habitat designation includes several opportunities for public comment, and thus also provides for public education. Through these outreach opportunities, land owners, State agencies, and local governments have become more aware of the status of and threats to the northern spotted owl and the conservation actions needed for recovery.

The designation of critical habitat may also indirectly cause State or county jurisdictions to initiate their own additional requirements in areas identified as critical habitat. These measures may include additional permitting requirements or a higher level of local review on proposed projects. However, in Washington, State forest practices regulations provide an exemption for review for lands managed under an HCP. Thus, even should the State respond to designation of critical habitat by instituting additional protections, the HCP will not be subject to those protections as the species is considered already addressed, and therefore no additional benefit would accrue through State regulations.

Benefits of Exclusion—Compared to the minimal benefits of inclusion of this area in critical habitat, the benefits of excluding it from designated critical habitat are more substantial.

HCP conservation measures that provide a benefit to the northern spotted owl and its habitat have been implemented continuously since 1993 on all covered lands owned and managed under the HCP. Excluding these lands from critical habitat designation will sustain and enhance the working relationship between the Service and the permit holder.

A related benefit of excluding lands within HCPs from critical habitat designation is the unhindered, continued ability to seek new partnerships with future HCP participants including States, counties, local jurisdictions, conservation organizations, and private landowners, which together can implement conservation actions that we would be unable to accomplish otherwise. If lands within the West Fork HCP plan area are designated as critical habitat, it would likely have a negative effect on our ability to establish new partnerships to develop HCPs, particularly large, regional HCPs that involve numerous participants and/or address landscape-level conservation of species and habitats. If excluded, the willingness of the landowner to work with the Service to manage federally listed species will continue to reinforce those conservation efforts and our partnership, which contribute toward achieving recovery of the northern spotted owl. We consider this voluntary partnership in conservation important in maintaining our ability to implement recovery actions such as habitat protection and restoration, and beneficial management actions for species on non-Federal lands.

In summary, the designation of critical habitat could have an unintended negative effect on our relationship with non-Federal landowners due to the perceived imposition of redundant government regulation. If lands within the West Fork HCP area are designated as critical habitat, it would likely have a negative effect on our continued ability to seek new partnerships with future participants can implement conservation actions (such as SHAs, and HCPs) that we would be unable to accomplish otherwise. By excluding these lands, we preserve our current private and local conservation partnerships and encourage additional conservation actions in the future.

Benefits of Exclusion Outweigh the Benefits of Inclusion—The benefits of including these lands in the designation are comparatively small. Because one of the primary threats to the northern spotted owl is habitat loss and degradation, the consultation process under section 7 of the Act for projects with a Federal nexus will, in evaluating effects to the northern spotted owl, evaluate the effects of the action on the conservation or functionality of the habitat for the species regardless of whether critical habitat is designated for these lands. The analytical requirements to support a jeopardy determination on excluded land are similar, but not identical, to the requirements in an analysis for an adverse modification determination on included land. However, the HCP contains provisions for protecting and maintaining northern spotted owl habitat that far exceed the conservation benefits afforded through section 7 consultation. It provides for

comprehensive measures applied across a large landscape that will benefit spotted owls. In this instance, the regulatory and educational benefits of inclusion have much less benefit than the continued benefit of the HCP including the educational benefits derived from the HCP.

The West Fork HCP provides for significant conservation and management within geographical areas that contain the physical or biological features essential to the conservation of the northern spotted owl and help achieve recovery of this species through the conservation measures of the HCP. Exclusion of these lands from critical habitat will help foster the partnership we have developed with West Fork, through the development and continuing implementation of the HCP. Furthermore, this partnership may aid in fostering future cooperative relationships with other parties in other locations for the benefit of listed species.

In summary, we determine that the benefits of excluding the West Fork HCP from the designation of critical habitat for the northern spotted owl outweigh the benefits of including this area in critical habitat.

Exclusion Will Not Result in Extinction of the Species—We have determined that exclusion of approximately 5,105 ac (2,066 ha) of lands covered under the West Fork HCP will not result in extinction of the northern spotted owl because the conservation measures identified within the HCP seek to maintain or surpass current habitat suitability for northern spotted owls. The HCP is designed to develop and maintain northern spotted owl dispersal habitat; as a result, total dispersal habitat will more than double in amount and wide gaps between stands of dispersal habitat will be decreased. In addition, the West Fork HCP provides for reserves for the next 100 years, ensuring that all forest habitat types and age classes currently on the tree farm, as well as special habitat types such as talus slopes, caves, nest trees, and den sites, are protected or enhanced. Seasonal protection is provided for active northern spotted owl nest sites. Further, for projects having a Federal nexus and affecting northern spotted owls in occupied areas, the jeopardy standard of section 7 of the Act, coupled with protection provided by the West Fork HCP, would provide a level of assurance that this species will not go extinct as a result of excluding these lands from the critical habitat designation. We find that exclusion of these lands within the West Fork HCP will not result in extinction of the northern spotted owl. Based on the above discussion, the Secretary is exercising his discretion under section 4(b)(2) of the Act to exclude from this final critical habitat designation portions of the proposed critical habitat units or subunits that are within the West Fork HCP boundary totaling about 5,105 ac (2,066 ha).

Other Conservation Measures or Partnerships

State of California

Mendocino Redwood Company

In this final designation, the Secretary has exercised his authority to exclude lands from critical habitat, under section 4(b)(2) of the Act, owned by The Mendocino Redwood Company (MRC, the company) and totaling approximately 232,584 total ac (94,123 ha) in Unit 3—Redwood Coast, in Mendocino and Sonoma Counties, California. This land is distributed among three critical habitat subunits as described in the following. In subunit RDC–2, we proposed approximately 209,550 ac (84,802 ha) for critical habitat designation. In subunit RDC–3, we proposed approximately 22,733 ac (9,200 ha) for critical habitat designation. In subunit RDC–4, we proposed 301 ac (121 ha) for critical habitat designation. All company lands proposed for designation within these three subunits have been excluded from critical habitat designation under section 4(b)(2) of the Act.

MRC has a long-standing voluntary partnership with the Service to protect the northern spotted owl on MRC lands. MRC initially approached the Service in 1998 to develop a combined habitat conservation plan and a State-level counterpart draft natural communities conservation plan (HCP/NCCP). Knowing that the completion of an HCP/NCCP would take an extended period of time, MRC and the Service worked together to develop a set of interim standards and measures to conserve and protect the northern spotted owl and its habitat, pending the completion of the HCP/NCCP. These written interim standards and measures are detailed and specific and have been incorporated into each of MRC's timber harvest plans since their development. These interim standards and measures are detailed in MRC's January 15, 2010, Northern Spotted Owl Resource Plan/Management Plan (SORP) (MRC 2010, pp. 1–30). The SORP was intended to serve as a bridge document to reduce resource impacts to both the northern spotted owl and its habitat until the completion of the HCP/NCCP. The SORP includes monitoring and survey requirements and northern spotted owl habitat protection measures that are implemented across the landscape. The SORP describes methodologies to locate owls, assess reproductive status, and provide a framework that includes habitat definitions and protections associated with northern spotted owl activity centers which provide measurable standards for habitat conservation. MRC and the Service meet frequently to discuss northern spotted owl study results provided by the company and this information is used by both the Service and MRC to develop measures that conserve the species through an iterative process that will assist in the development of the HCP/NCCP. In reviewing the SORP and monitoring results, we find that the SORP and protective measures therein provide substantial conservation benefits for the northern spotted owl and its habitat at a landscape scale.

The standards and measures described in the SORP are included in the ''Planning Agreement'' (dated August 5, 2009) that MRC entered into with the California Department of Fish and Game (CDFG) for preparation of the NCCP element of the HCP/NCCP. Planning Agreements are mandatory under the California Natural Community Conservation Planning Act, and inasmuch as the northern spotted owl standards and measures are included in MRC's planning agreement, they are mandatory. MRC has revised them when requested by the Service, as part of a voluntary partnership with the Service.

In addition, MRC has two State-level planning documents that are in effect now and which contain substantial long-terms benefits for northern spotted owl habitat. One is the company's 2008 Option A plan, entered into with CALFIRE, which sets sustainable long-term timber harvest levels and controls on standing forest inventory, and the other is the companion 2012 Management Plan, also entered into with CALFIRE, which outlines company-specific management practices used in conjunction with the Option A harvesting program. Together, these documents have enabled the company to maintain its forest certification through the Forest Stewardship Council (FSC) which gives the company access to certain wholesale lumber markets that promote ''green'' certified wood products. The State-level planning documents have also enabled the company to obtain registration through the California Climate Action Registry which is the designated clearinghouse for carbon-credit sellers under California's developing cap-and-trade

program. The company's long-term management direction under Option A (2008) and the Management Plan (2012) is to greatly expand their stock of standing forest inventory, with a near-doubling of that inventory over the next nine decades. While we do not consider here the northern spotted owl conservation measures in the company's proposed HCP in support of 4(b)(2) exclusion, since that plan is not yet finalized, we do note that practically all of the long-term habitat and demographic objectives in the proposed HCP are dependent on the forest inventory trajectory that is established and in effect under Option A and the Management Plan, and are partly dependent on the distribution and array of silvicultural treatments that is specified under the Management Plan. Time intervals, measurable targets, and enforcement mechanisms for forest inventory development are already in place through the State-level forest planning processes, whether or not the proposed HCP is finalized. The company's long term commitment to expanding standing forest inventory is also demonstrated by their status as a seller in the State's emerging carbon credit market. In order to sell carbon credits, the seller has to possess surplus carbon; in forest management terms, the only way to have a continuous supply of surplus carbon is to have a body of inventory that is on a continuous-net-growth trajectory. The 2012 Management Plan also explicitly documents some of the company's internal management direction on the northern spotted owl with regard to the linkages between future forest conditions and owl habitat utilization, direction on the acquisition and analysis of owl breeding site surveys, and future development of northern spotted owl habitat models.

Following are summaries of specific measures in the 2012 Management Plan that will have direct, indirect, near-term and long-term benefits for the northern spotted owl, and which are in effect currently: (1) The company, having inherited a severely depleted forest inventory from the previous owners, has a standing policy to rebuild inventories, which will result in a doubling of total standing volume by the ninth decade of the planning horizon; (2) total harvest levels through the 100-year planning horizon are constrained to a graduating percentage of periodic growth volume, from a current 48 percent to 84 percent in the tenth decade of the plan; (3) a shift in the use of uneven-aged silviculture from a current 65 percent of harvest acres to 99 percent in the fifth decade of the plan; (4) protection policies for unharvested old-growth stands and previously harvested stands containing residual old-growth trees; (5) wildlife tree and snag retention requirements that meet or exceed Service recommendations and exceed current State Forest Practice rules; (6) a minimum forest floor large woody debris (LWD) standard on general forest land of 70 cubic feet per ac (4.9 cubic meter per ha) based on minimum-sized logs 16 in (41 cm) diameter and 10 ft (3.3 m) in length, increasing to 98 cubic feet per ac (6.9 cubic meter per ha) in riparian areas; and (7) a hardwood management policy that maintains a minimum hardwood basal area of 15 square feet per ac (3.4 square m per ha) in mixed conifer-hardwood stands. Each policy outlined above will result in: (a) A long term increase in standing forest biomass per unit of land area; or (b) increased spatial continuity of vegetative types that are suitable northern spotted owl habitat; or (c) retention of specific features such as old-growth trees or stands, and retention of a minimum level of hardwoods, snags, and wildlife trees. All of these policies will either lead to maintenance or enhancement of northern spotted owl habitat suitability or lead to emergence of suitable habitat where it is currently not present, thereby benefiting the conservation of the northern spotted owl and its habitat.

The company has completed a draft of their proposed HCP/NCCP, and the northern spotted owl is one of the covered species in this document. The company has submitted the HCP application to the Service. If the HCP/NCCP is approved and permits issued, the term of the incidental take permit and counterpart State permit would be 80 years. The combined draft Environmental Impact Statement (EIS) and State draft Environmental Impact Report (EIR) is scheduled for issuance in fall of 2012, and a final HCP/NCCP and final EIS/EIR is anticipated in spring or summer, 2013. However, as noted above, we have not taken the proposed HCP/NCCP into account in determining the level of protection currently provided to the northern spotted owl on MRC land, as we have not completed processing the permit application and a final decision has not been made whether it meets issuance criteria. We cite to the development of this HCP/NCCP only in terms of evidence of MRC's commitment to partnering with the Service for the conservation of the northern spotted owl.

Benefits of Inclusion—We find there are minimal benefits to including MRC lands in critical habitat. As discussed above, the designation of critical habitat invokes the provisions of section 7. However, in this case, we find the requirement that Federal agencies consult with us and ensure that their actions are not likely to destroy or adversely modify critical habitat will not result in significant benefits to the species because the possibility of a Federal nexus for a project on these lands that might trigger such consultation is limited since there is little likelihood of an action that will involve Federal funding, authorization, or implementation. In addition, since the lands under in question are occupied by the northern spotted owl, if a Federal nexus were to occur, section 7 consultation would already be triggered and the Federal agency would consider the effects of its actions on the species through a jeopardy analysis. Because one of the primary threats to the northern spotted owl is habitat loss and degradation, the consultation process under section 7 of the Act for projects with a Federal nexus will, in evaluating effects to the northern spotted owl, evaluate the effects of the action on the conservation or function of the habitat for the species regardless of whether critical habitat is designated for these lands. Although the standards for jeopardy and adverse modification are not the same, the additional conservation that could be attained through the section 7 prohibition on adverse modification analysis would not likely be significant in this case because of the conservation agreements already in place.

Another potential benefit of including lands in a critical habitat designation is that the designation can serve to educate landowners, State and local government agencies, and the public regarding the potential conservation value of an area, and may help focus conservation efforts on areas of high conservation value for certain species. Any information about the northern spotted owl and its habitat that reaches a wider audience, including parties engaged in conservation activities, is valuable. However, in this case the educational value of critical habitat is limited. As evidenced by their extensive forest management planning, this forestland owner is knowledgeable about the species.

The designation of critical habitat may also indirectly cause State or county jurisdictions to initiate their own additional requirements in areas identified as critical habitat. These measures may include additional permitting requirements or a higher level of local review on proposed projects. However, CALFIRE has indicated to us that it is unlikely to

impose any new requirements on project proponents if critical habitat is designated in areas already subject to California Forest Practice Rules. Therefore, we believe this potential benefit of critical will be limited.

Benefits of Exclusion—The benefits of excluding from designated critical habitat the approximately 232,584 ac (94,123 ha) of lands currently owned by the MRC are substantial. We have created a close partnership with the company through the development of the SORP and the resulting draft HCP/NCCP. The SORP contains provisions that will improve inventory of redwood, Douglas-fir, and other conifers across MRC's ownership and includes measures that will return forest types to those that support the northern spotted owl. In addition, the SORP stipulates a series of actions intended to increase canopy cover and move management of forest stands to uneven-aged management to promote multilayered canopies and protect old growth stands and individual trees with old-growth structural features. The SORP also contain provisions that will result in stands being grown in Watercourse and Lake Protection Zones (WLPZ) that exceed current State Forest Practice requirements and that meet the Service's recommended standards for standing tree basal area and retention of large woody debris in watercourse protection zones. All of these measures are consistent with recommendations from the Service for the conservation of the northern spotted owl, and will afford benefits to the species and its habitat.

Other MRC actions also demonstrate their commitment to the Federal-State-private partnership. The company's Management Plan in connection to their FSC forest certification is already in effect. That Plan has numerous measures within it that the company has been implementing on the ground for several years without any inducement from the cooperating Federal and State agencies. Much of the Management Plan is concerned with harvest scheduling and how the company will remedy its current deficit in standing forest inventory. The major part of that remedy is found in the 10-decade harvesting schedule in the Management Plan, which tightly constrains harvest levels in the early decades of the Plan and relaxes the constraint in later decades. The company has implemented the designed harvest schedule since 2000, which is supported in the certification audit reports of 2005 and 2010. This means that MRC has, in fact, foregone a portion of their potential short-term harvest revenues for nearly 12 years to fulfill a Management Plan that is not under Federal purview. Company policies embodied in the Management Plan will result in (a) a long term increase in standing forest biomass per unit of land area; or (b) increased spatial continuity of vegetative types that are suitable northern spotted owl habitat; or (c) retention of specific features such as old-growth trees/stands, retention of a minimum level of hardwoods, snags, and wildlife trees. All of these policies will either lead to maintenance of northern spotted owl habitat suitability or lead to emergence of suitable habitat where it is currently not present.

Excluding the approximately 232,584 ac (94,123 ha) owned and managed by MRC from critical habitat designation will provides significant benefit in terms of sustaining and enhancing the excellent partnership between the Service and the company, with positive consequences for conservation. The willingness of MRC to voluntarily undertake conservation efforts for the benefit of the northern spotted owl and work with the Service to develop new conservation plans for the species will continue to reinforce those conservation efforts and our partnership, which contribute toward achieving recovery of the northern spotted owl. We consider this voluntary partnership in conservation vital to our understanding of the northern spotted owl status of species on MRC lands and in the redwood region, and necessary for us to implement recovery actions such as habitat protection and restoration, and beneficial management actions for species.

The designation of critical habitat could have an unintended negative effect on our relationship with non-Federal landowners due to the perceived imposition of government regulation. If lands within the area managed by MRC for the benefit of the northern spotted owl are designated as critical habitat, it could have a chilling effect on our continued ability to seek new partnerships with future participants including States, counties, local jurisdictions, conservation organizations, and private landowners, which together can implement various conservation actions (such as SHAs, HCPs, and other conservation plans, particularly large, regional Conservation Plans that involve numerous participants and/or address landscape-level conservation of species and habitats) that we would be unable to accomplish otherwise. In addition, MRC serves as a model of voluntary conservation by a private landowner, and may aid in fostering future voluntary conservation efforts by other parties in other locations for the benefit of listed species. We consider the positive effect of excluding proven conservation partners from critical habitat to be a significant benefit of exclusion.

The Benefits of Exclusion Outweigh the Benefits of Inclusion—We have reviewed and evaluated the exclusion of approximately 232,584 ac (94,123 ha) of land owned and managed by MRC from the critical habitat designation. The benefits of including these lands in the designation are comparatively small, since the habitat on the covered lands is already being monitored and managed under the current Management Plan and the Timber Management Plan to improve the habitat elements that are equivalent to the physical or biological features that are outlined in this critical habitat rule. We therefore anticipate little, if any, additional protections through application of the section 7 prohibition on adverse modification due to the designation of critical habitat on these lands.

The potential educational benefits of inclusion are also limited. The company has an active monitoring program on over 150 northern spotted owl activity sites and is making increasing contributions to our knowledge of the species through focused research. In addition, there is a growing local constituency for current land management direction as a result of the company's outreach efforts in the form of public informational presentations and tours of the property. In this instance, any potential educational benefits of inclusion would have much less practical effect than any of the scientific and informational activities that the company has initiated to date.

In contrast, the benefits derived from excluding this ownership and enhancing our private lands partnership with MRC are significant. We have developed a solid working relationship with MRC, and expect this beneficial conservation partnership to continue. The benefits of this partnership are significant, because MRC has demonstrated that its actions will contribute substantially to the conservation of the northern spotted owl and its habitat and influence long-term management outcomes across the entire ownership. We noted the positive conservation benefits that accrue from exclusion from critical habitat, including relief from perceived potentially duplicative regulatory burden and the increased potential of pursuing additional conservation agreements with other private landowners. As discussed above, MRC

has developed a long-standing practice of managing its lands in a sustainable nature that benefits the northern spotted owl and its habitat. We also discussed the long-term value of the partnership with MRC, and evidence of the company's commitment to that partnership through voluntary implementation and coordination of conservation actions. We will not repeat that discussion here, but point to it as the strongest among all factors we considered in the weighing of the benefits of exclusion against the benefits of inclusion.

We have determined that the additional regulatory benefits of designating critical habitat, afforded through the section 7(a)(2) consultation process, are minimal because of limited Federal nexus and because conservation measures specifically benefitting the northern spotted owl and its habitat are in place as a result of our partnership with the company and as demonstrated by the provisions of the SORP and other planning documents, as discussed above. The potential educational and informational benefits of critical habitat designation on lands containing the physical or biological features essential to the conservation of the northern spotted owl would be minimal, because MRC is making substantial contributions to our understanding of the ecology of the northern spotted owl and its habitats in the redwood region, and continues to disseminate useful information through public education events. Therefore, in consideration of the factors discussed above in the *Benefits of Exclusion* section, including the relevant impact to current and future partnerships, we have determined that the benefits of exclusion of lands owned by the MRC outweigh the benefits of designating these areas as critical habitat.

Exclusion Will Not Result in Extinction of the Species—We have determined that the exclusion of 232,584 ac (94,123 ha) from the designation of critical habitat for the northern spotted owl on lands owned and managed by MRC will not result in extinction of the species. Conservation efforts that are currently in effect through the SORP (and not taking into account the draft HCP/NCCP) will adequately protect the geographical areas containing the physical or biological features essential to the conservation of the species. For projects having a Federal nexus and affecting northern spotted owls in occupied areas, as is the case here, the jeopardy standard of section 7 of the Act, coupled with current land management measures that are not under Federal purview, would provide assurances that this species will not go extinct as a result of excluding these lands from the critical habitat designation. Based on the above discussion, the Secretary is exercising his discretion under section 4(b)(2) of the Act to exclude from this final critical habitat designation portions of the proposed critical habitat units or subunits that are within the Mendocino Redwood Company ownership boundary totaling 232,854 ac (92,123 ha).

State of Washington

Scofield Corporation Deed Restriction (Formerly Habitat Conservation Plan)

In this final designation, the Secretary has exercised his authority to exclude 40 ac (16 ha) of lands from critical habitat, under section 4(b)(2) of the Act, that are covered under the Scofield Corporation Deed Restriction in the East Cascades North CHU. A incidental take permit based on an HCP, was issued to Scofield Corporation in 1996 (noticed February 20, 1996 (61 FR 6381), issued April 3, 1996). The permit had a duration for only one year, but as provided in the permit terms, the lands under this HCP are now covered by a Deed Restriction for those lands in perpetuity. This HCP and deed restriction include 40 ac (16 ha) of forest lands in Chelan County, Washington. The HCP-covered forest-management activities and the associated incidental take permit included only the northern spotted owl. The HCP provided for mitigation and minimization measures by retaining a buffer of intact habitat, implementing selective timber harvest practices, and placing a perpetual deed restriction on the property permanently prohibiting further timber harvest or tree removal except with the express written consent of the Service. These measures were designed to ensure the retention of some northern spotted owl habitat and approximately 72 percent of the total number of trees after harvest.

At the time the permit was approved, the HCP-covered lands included a single northern spotted owl site with most of its habitat on adjacent Federal lands. The amount of habitat was low, due to natural eastside Cascades characteristics and recent fire. Approximately 55 percent of the mature trees in the 40-acre project area were allowed to be removed, which in the short term further reduced the availability of potential nesting, roosting, or foraging sites for northern spotted owls. However, the adverse effects on this northern spotted owl pair due to loss of habitat was likely low, because the habitat was marginal Type C (young forest marginal) at best, and surveys in the project area suggested low use by northern spotted owls. In addition, the no-harvest buffer along the highway ensured that is less than 40 ac (16 ha) was affected by the action, which is a small portion of the suitable habitat that is available for use by northern spotted owls within the median home range of that site as well as the eastern Cascades.

Under the HCP, about 55 percent of the mature trees and 28 percent of the total number of trees in the project area were allowed to be harvested. Selective harvest resulted in retention of different size and age classes of trees to contribute to stand structure and species diversity, important components to northern spotted owl habitat. Thinning the stand will allow younger age-class trees to grow, and continue to contribute to the multilayer structure of the stand. Since the project area is being allowed to grow and develop into perpetuity, suitable northern spotted owl habitat will be available in the future. This potential habitat will complement habitat that is likely to occur on adjacent national forest lands being managed as late-successional forest. In the long-term, the potential for the project area to become northern spotted owl habitat and remain in that condition is substantially greater than it would have been without the HCP. In addition, the Deed Restriction identified in the land contract provides for the permanent protection of this habitat.

Benefits of Inclusion—We find that there is minimal benefit from designating critical habitat for the northern spotted owl within the Scofield Deed Restriction because, as explained above, these lands are already managed for the conservation of the species under the deed restrictions. Section 7 is unlikely to provide additional regulatory protection, not only because Federal actions on this small 40-acre parcel are unlikely, but also because any such Federal action would have to be consistent with the Deed Restriction. Thus the existence of this Deed Restriction reduces any incremental benefits that may be provided by section 7. The Deed Restriction provides for the needs of the northern spotted owl by providing northern spotted owl dispersal habitat and improving conditions. Therefore, designation of critical habitat would be redundant on these lands, and would not provide additional measureable protections. In addition, the conservation measures identified within the Deed Restriction seek to achieve conservation goals for northern spotted owls and their habitat, and thus can be of greater conservation benefit than the

designation of critical habitat, which does not require specific management actions.

A potential benefit of including lands in a critical habitat designation is that the designation can serve to educate landowners and the public regarding the potential conservation value of an area, and may help focus conservation efforts on areas of high conservation value for certain species. However, the additional educational and informational benefits that might arise from critical habitat designation have been largely accomplished through the public review and comment of the HCP/Environmental Assessment, as well as the Implementation Agreement. In addition, through the Deed Restriction, the current landowner and any future owner are made fully aware of the needs of the northern spotted owl on this parcel.

Benefits of Exclusion—A benefit of excluding lands within HCPs from critical habitat designation is the unhindered, continued ability to seek new partnerships with future HCP participants including States, counties, local jurisdictions, conservation organizations, and private landowners, which together can implement conservation actions that we would be unable to accomplish otherwise. In particular, if lands within the Scofield Corporation Deed Restriction area are designated as critical habitat, it would likely have a negative effect on our ability to establish new partnerships to develop HCPs with smaller landowners who occupy key landscapes. It could be perceived as adding redundant Federal regulation on top of the HCP's requirement to protect the land in perpetuity. By excluding these lands, we may encourage additional conservation actions in the future.

Benefits of Exclusion Outweigh the Benefits of Inclusion—In summary, we determine that the benefits of excluding the Scofield Corporation lands subject to the Deed Restriction from the designation of critical habitat for the northern spotted owl outweigh the benefits of including this area in critical habitat. We find that including this area in the designation would result in minimal, if any, additional benefits to the northern spotted owl, as explained above. Excluding this parcel from critical habitat could result in real benefits by encouraging other small landowners to participate in northern spotted owl conservation efforts by demonstrating that we will not impose redundant regulatory burdens when they undertake meaningful conservation efforts. The management strategies of the Scofield Deed Restriction are designed to maintain and enhance habitat for the northern spotted owl. The Scofield Deed Restriction includes forest-management practices and habitat conservation objectives that benefit the northern spotted owl and its habitat, which exceeds any conservation value provided as a result of a critical habitat designation.

Exclusion Will Not Result in Extinction of the Species—We have determined that exclusion of approximately 40 ac (16 ha) of lands covered under the Scofield Deed Restriction will not result in extinction of the northern spotted owl because it provides northern spotted owl dispersal habitat and improves habitat conditions, and it the possibility for the project area to become northern spotted owl habitat and remain in that condition is substantially greater than without the HCP. Further, the protection provided by the Scofield Deed Restriction would provide a level of assurance that this species will not go extinct as a result of excluding these lands from the critical habitat designation. We find that exclusion of these lands within the Scofield Deed Restriction will not result in extinction of the northern spotted owl. Based on the above discussion, the Secretary is exercising his discretion under section 4(b)(2) of the Act to exclude from this final critical habitat designation portions of the proposed critical habitat units or subunits that are covered by the Scofield Corporation Deed Restriction totaling about 40 ac (16 ha).

Exclusion of Private Lands

State of California

Our proposed designation included 123,348 ac (49,917 ha) of privately-owned lands without existing Federal conservation agreements in the State of California that we identified as critical habitat for the northern spotted owl.

Forest management and forest practices on private lands in California, including harvesting for forest products or converting land to another use are regulated by the State under Division 4 of the Public Resources Code, and in accordance with the California Forest Practice Rules (California Code of Regulations, (CCR) Title 14, Sections 895–1115). Under this framework, the California Department of Forestry and Fire Protection (CALFIRE) is the designated authority on forest management and forest practices on private lands in California.

All private land timber harvesting in California must be conducted in accordance with a site-specific timber harvest plan (THP) that is submitted by the owner and is subject to administrative approval by CALFIRE. The THP must be prepared by a State-registered professional forester, and must contain site-specific details on the quantity of timber involved, where and how it will be harvested, and the steps that will be taken to mitigate potential environmental damage. The THP and CALFIRE's review process are recognized as the functional equivalent to the environmental review processes required under the California Environmental Quality Act of 1970 (CEQA). The policy of the State with regard to the northern spotted owl can be characterized as one of take-avoidance. The Director of CALFIRE is not authorized to approve any proposed THP that would result in take of a federally-listed species, including the northern spotted owl unless that taking is authorized under a Federal Incidental Take Permit (review process is outlined in 14 CCR 919.9 and 919.10). This latter point creates an incentive for private landowners to enter into Federal safe harbor agreements or habitat conservation plans. CALFIRE also regulates the conversion permitting process in which private forest and woodland can be converted to agricultural uses (in contrast, conversions of forest and woodlands to residential, commercial, and industrial uses are evaluated and permitted under local land use planning authorities).

Benefits of Inclusion—We find there are minimal benefits to including these lands in critical habitat. As discussed above, the principal benefit of including an area in critical habitat is the requirement that Federal agencies consult with the Service under section 7(a)(2) of the Act to ensure actions they fund, authorize, or carry out are not likely to result in the destruction or adverse modification of any designated critical habitat. Section 7(a)(2) also requires that Federal agencies must consult with us on actions that may affect a listed species and refrain from undertaking actions likely to jeopardize the continued existence of such species.

Our Final Economic Analysis (IEC 2012b) concludes that critical habitat designation for the northern spotted owl is unlikely to directly affect timber harvests on private lands in California because of the low likelihood that such harvests would be simultaneously connected to a Federal permitting or funding action. Without a pending Federal action, there is no basis for initiating a consultation process under section 7 of the Act. In northern California, the Service has seen very few section 7 actions resulting from Federal permitting or funding activity on private

lands. The U.S. Army Corps of Engineers (Corps) through the U.S. Environmental Protection Agency (EPA) are the Federal agencies responsible for regulating section 404 of the Clean Water Act, which deals with discharge of dredged or fill material into waters of the United States. In the areas identified as critical habitat for the northern spotted owl the Corps has not taken jurisdiction over activities associated with stream alteration or fill and has deferred to the State of California for regulating these activities. As a result many proposed actions involving water quality issues and stream disturbance are not referred to the Service for section 7 consultation. The majority of the water quality permitting actions in California are now administered by the California Department of Fish and Game (CDFG) and by Regional Water Quality Control Boards. Water quality permit reviews by the Corps are very uncommon. When Federal consultation does occur, the affected areas are typically limited to streams or roadways adjacent to streams and thus in areas not considered habitat for the northern spotted owl. CALFIRE has indicated (in its correspondence of July 6, 2012) that it has no plans to enact additional requirements for protection of the northern spotted owl in response to a possible critical habitat designation of private lands in the State.

We, therefore, conclude that the requirement that permitting and funding agencies consult with us and ensure that their actions are not likely to destroy or adversely modify critical habitat will not result in significant benefits to the species because the possibility of a Federal nexus for a project on these lands that might trigger such consultation is limited (there is little likelihood of an action that will involve Federal funding, authorization, or implementation). In addition, since the lands in question are occupied by the northern spotted owl, if a Federal nexus were to occur, section 7 consultation would already be triggered and the Federal agency would consider the effects of its actions on the species through a jeopardy analysis. Because the possibility of a Federal nexus on these private lands is limited, the additional regulatory benefits to the species and its habitat through inclusion in critical habitat, if any, are anticipated to be minimal. In addition, existing State regulations provide protections for the northern spotted owl and its habitat, and these protections are in continuous effect. The protections to the critical habitat of the northern spotted owl, by contrast, come into effect only in the event of a Federal action.

Another benefit of including lands in a critical habitat designation is that it serves to educate landowners, State and local governments, and the public regarding the potential conservation value of an area. This helps focus and promote conservation efforts by other parties by identifying areas of high conservation value for northern spotted owls. Any information about the northern spotted owl and its habitat that reaches a wider audience, including parties engaged in conservation activities, is valuable. In the case of the northern spotted owl, any potential educational benefits that might be attributable to critical habitat designation are minimized by the existing State regulatory framework for the northern spotted owl in timber harvest planning. Private landowners who harvest timber in proximity to northern spotted owl activity sites are required to conduct surveys of owl activity and report those results in their proposed timber harvest plans that are submitted to CALFIRE for approval, so critical habitat designation will not result in any additional data collection. While the State's existing take-avoidance strategy for the northern spotted owl does not necessarily provide for long term conservation of suitable habitat, it does serve an important informational service with private landowners through the timber harvest planning process. Thus, CALFIRE's existing regulatory framework provides adequate and consistent education to the affected community regarding the northern spotted owl and its conservation needs.

Similarly, the great majority of industrial and non-industrial forest landowners, along with the in-house and consulting biologists who conduct the owl survey work, already voluntarily submit their survey results to the CDFG for entry into the California Natural Diversity Database (CNDDB), which is the State's clearinghouse for occupancy, activity, and spatial data on special status species. It is highly unlikely that inclusion in the final critical habitat designation could cause any increases in landowner and biologist participation in the CNDDB reporting. Voluntary participation rates are currently very high, and we have no evidence to suggest that inclusion in critical habitat would increase those rates any further.

In this case the educational value of critical habitat is further limited by the fact that the northern spotted owl is a high-profile species, and most forestland owners in the range of the northern spotted owl are knowledgeable about the species. The release of the Revised Recovery Plan for the Northern Spotted Owl in 2011 was preceded by outreach efforts and public comment opportunities, and provided information about the northern spotted owl and its conservation needs to a wide constituency. Furthermore, we conducted extensive outreach efforts on the proposed revision of critical habitat, including multiple public information meetings and opportunities for public comment. Through these outreach opportunities, land owners, State agencies, and local governments have become aware of the status of and threats to the northern spotted owl, and the conservation actions needed for recovery.

Another potential benefit of the designation of critical habitat is that it may indirectly cause State or county jurisdictions to initiate their own additional protective requirements in areas identified as critical habitat. These measures may include additional permitting requirements or a higher level of local review on proposed projects. However, CALFIRE has indicated to use that it is unlikely to impose any new requirements on project proponents if critical habitat is designated in areas already subject to California Forest Practice Rules. Therefore, we believe this potential benefit of critical will be limited.

Finally, there may be some ancillary benefits if the designation resulted in changed timber management practices on these private lands. These benefits could include but are not limited to: public safety benefits by increasing resiliency of timber stands, improved water quality, aesthetic benefits, and carbon storage. However, as discussed above, the possibility of a Federal nexus on these private lands is limited, so changes in timber management as a result of critical habitat, and any attendant ancillary benefits, are anticipated to be minimal.

Benefits of Exclusion—The benefits of excluding from designated critical habitat the approximately 123,348 ac (49,917 ha) of private lands in California are relatively greater.

Excluding the approximately 123,348 ac (49,917 ha) of private lands from critical habitat designation will sustain and enhance the conservation partnership between the Service and CALFIRE. The Service is currently working with CALFIRE to explore avenues for more comprehensive conservation planning for the northern spotted owl in northern California that goes beyond the existing take-avoidance strategy. Development of a landscape

scale analysis and plan (e.g., general conservation plan) would provide for greater protections to the northern spotted owl and could incorporate critical habitat conservation elements within that planning process. Current revisions and improvements to the CNDDB database would aid in the development of this plan, with the ability to evaluate status and trends across the region versus on a singular THP or Non-industrial Timber Management Plan (NTMP) level. Critical habitat designation would be viewed as another layer of regulatory process to that already overseen by CALFIRE and could impede landowner support for the development of this larger programmatic conservation plan and undercut the efforts of CALFIRE to contribute to such a discussion. We received several public comments objecting to this perceived redundancy in regulation. Excluding those private lands from the designation would avoid a chilling effect on the partnership between the Service and the affected State regulatory agencies in California regarding administration of their existing conservation programs to protect and conserve northern spotted owls on private lands. We consider the maintenance of our partnership between the Service and the affected State regulatory agencies in California to be a significant benefit of exclusion.

In addition, there are many other opportunities for private landowners to enter into conservation agreements without Federal involvement that will benefit northern spotted owls. Landowners can obtain ''green'' forest certification through the Forest Stewardship Council (FSC) or the Sustainable Forestry Initiative (SFI) that enables access to certain wholesale lumber markets. They can register their property with the California Climate Action Registry to gain access to the emerging carbon credit market in California, or they can sell conservation easement rights on their properties to a land trust. In all cases, the landowner gains immediate economic benefits in exchange for agreeing to a management program on their lands that meets the objectives of the certification or registration entity, or the land trust. All of these instruments, by design, involve the conservation and expansion of standing forest inventory and forest cover on the participating ownerships. Whether by design or not, that will lead to the long-term improvement of existing northern spotted owl habitat suitability and to the emergence of suitable habitat in areas where it is currently unsuitable. These market-based agreements have the long term potential for significantly more on-the-ground benefits for the northern spotted owl on private lands than would the limited regulatory and educational benefits that would result from critical habitat designation.

The economic incentives for landowners to enter into these agreements are independent of a critical habitat designation. We are not certain how designation might affect perceptions and priorities among the grantors in agreements (i.e., the certification and registration entities and the land trusts). For example, land trusts operate on limited funds and we do not know how critical habitat designation might influence them in prioritizing properties for easement acquisition; that is, whether it might lead them to look more or less favorably on designated lands, or treat some geographic areas preferentially over others. Thus, exclusion from designation could avoid any uncertain, and possibly detrimental, effects on both buyers (land trusts, certification entities) and sellers (landowners) in market-based conservation programs (IEC 2012b, p. 5–21).

Excluding these lands may reduce the perception that some private landowners have that they are being subjected to redundant and unnecessary regulation. As noted above, all private land timber harvesting in California must be conducted in accordance with a site-specific THP that is submitted by the owner and is subject to administrative approval by CALFIRE. The Director of CALFIRE is not authorized to approve any proposed THP that would result in take of a federally-listed species, including the northern spotted owl, unless that taking is authorized under a Federal Incidental Take Permit. The additional overlay of Federal critical habitat on these private lands may result in lack of support for the development of a programmatic conservation agreement with CALFIRE and their valuable contribution of information to the CNDDB due to their perception of duplicative and burdensome regulation specific to the northern spotted owl.

Benefits of Exclusion Outweigh the Benefits of Inclusion—We have reviewed and evaluated the exclusion of approximately 123,348 ac (49,917 ha) of privately-owned lands in the State of California from the critical habitat designation. The benefits of including these lands in the designation are comparatively small. We find there is little likelihood of a Federal nexus on these private lands that would trigger the regulatory protections of critical habitat under section 7 of the Act. We therefore anticipate little, if any, additional protections through a supplemental analysis of potential adverse modification due to the designation of critical habitat on these lands.

The potential educational benefits of inclusion are also limited. Under existing State regulations, private landowners who harvest timber in proximity to northern spotted owl activity sites are required to conduct surveys of owl activity consistent with the Service-recommended protocol and report those results in their proposed timber harvest plans that are submitted to CALFIRE for approval, so landowners are already aware of the presence of the northern spotted owl and its habitat needs, and critical habitat designation will not result in any additional data collection. The State of California's existing take-avoidance strategy for the northern spotted owl provides an important informational service with private landowners through the timber harvest planning process. Therefore, in this instance, any potential educational benefits of inclusion are minimal.

In contrast, the benefits derived from excluding private lands and enhancing our partnership with California State regulatory agencies are relatively greater. The minimal benefits of inclusion are outweighed by the benefits of fostering conservation partnerships with CALFIRE that would relieve private landowners of what they might perceive as duplicative regulations. Exclusion could also encourage the partnership and collaboration in development of the landscape conservation planning between the Service and CALFIRE by focusing efforts towards that planning effort versus applying a regulatory process that would have limited private land involvement.

We also considered the avoidance of potential issues associated with regulatory uncertainty due to critical habitat designation to be a significant benefit of exclusion. For example, there may be a significant benefit of exclusion from designation that would accrue due to the avoidance of any uncertain, and possibly detrimental, effects on both buyers (land trusts, certification entities) and sellers (landowners) in market-based conservation programs that stand to provide significant conservation benefits to the northern spotted owl.

We have determined that maintaining our partnership with California State regulatory agencies provides a greater benefit than would the regulatory and educational benefits of critical habitat designation. Therefore, in consideration

of the factors discussed above, we have determined that the benefits of exclusion of private lands in California outweigh the benefits of designating these areas as critical habitat.

Exclusion Will Not Result in Extinction of the Species—We have determined that exclusion of 123,348 ac (49,917 ha) of private lands in northern California that are not currently under a Federal agreement from critical habitat for the northern spotted owl will not result in the extinction of the species. Habitat protection provisions in the current California forest practice regulation on private forestlands provide some level of protection for the species and its habitats. We reiterate here that under the California State Code (14 CCR 919.9 and 919.10), the Director of CALFIRE is not authorized to approve any proposed THP that would result in take of a federally-listed species unless that taking is authorized under a Federal Incidental Take Permit. For projects having a Federal nexus and affecting northern spotted owls in occupied areas, as is the case here, the jeopardy standard of section 7 of the Act, coupled with current land management measures that are not under Federal purview, would provide assurances that this species will not go extinct as a result of excluding these lands from the critical habitat designation. Further, the exclusion of these lands from the final critical habitat designation does not preclude advances in our scientific knowledge of the species and using that knowledge to effectively advocate future improvements in State forest practice policies and procedures. Based on the preceding analysis, the Secretary is exercising his discretion under section 4(b)(2) of the Act to exclude private lands totaling 123,348 ac (49,917 ha) from the final critical habitat designation.

State of Washington

In Washington we proposed 133,895 ac (54,186 ha) of private lands within Spotted Owl Special Emphasis Areas (SOSEAs) as critical habitat; all of these lands were identified as under consideration for exclusion. However, as described in Changes from the Proposed Rule, many of the small, private parcels were removed from the final designation upon a determination that they did not meet the definition of critical habitat, leaving. The remaining areas of private lands in Washington contained in this designation covered by HCPs or SHAs and are private industrial forest lands; these private lands are not currently covered by HCPs or SHAs but are covered under the WDNR Forest Practices Rules (FPR) and largely located in SOSEAs. We have excluded areas covered by HCPs and SHAs because, for the reasons discussed above, the benefits of excluding them outweigh the benefits of including them in critical habitat. We sought to make our designation of private lands in Washington as consistent as possible with Washington State regulations governing forest practices on private lands. Most of the remaining private lands are located only within SOSEAs, areas designated by the State to provide for demographic and/or dispersal support as necessary to complement the northern spotted owl protection strategies on Federal land within or adjacent to the SOSEAs. We find that for these lands, too, the benefits of excluding them in critical habitat outweigh the benefits of including them.

In Washington, any private timber harvest must obtain a permit from, and comply with, the Washington Forest Practices Act (RCW 76.09) as well as the Washington Forest Practices Rules (WAC 222). In the absence of a federally-approved HCP covering northern spotted owls or a State-approved special wildlife management plan, suitable northern spotted owl habitat in State-designated SOSEAs on non-federal lands is protected by the special Washington Forest Practices Rules in State-designated SOSEAs. Within SOSEAs, the Forest Practices rules provide protection for suitable northern spotted owl habitat. The Washington Forest Practices Rules maintain the viability of each northern spotted owl site center by protecting: (a) All suitable spotted owl habitat within 0.7 mile of each spotted owl site center; and (b) a total of 2,605 acres of suitable spotted owl habitat within the median home range circle with a radius of 1.8 miles. Under the rules, proposed forest practices likely to adversely affect spotted owl habitat in either category (a) or (b) above are likely to have significant adverse impacts to the northern spotted owl, and such activities would require a Class IV special forest practices permit and an environmental impact statement per the State Environmental Policy Act. The overarching policy goal of the Washington Forest Practices Rules is to complement the conservation strategy on Federal lands, and as such the SOSEAs are adjacent to Federal lands. SOSEAs are designed to provide a larger landscape for demographic and dispersal support for northern spotted owls. The long-term goal is to support a viable population of northern spotted owls in Washington.

In Washington, the Forest Practices Board (the State regulatory rule-making body) has a long-standing relationship with the Service and collaborates extensively on northern spotted owl conservation. The Service provided extensive technical assistance in the development of the Board's existing northern spotted owl rules. The Board was recognized in Recovery Action 18 in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011, p. III–57) for its ongoing owl conservation efforts and encouraged to continue to use its existing processes ''to identify areas on non-federal lands in Washington that can make strategic contributions to spotted owl conservation over time. The Service encourages timely completion of the Board's efforts and will be available to assist as necessary.'' The Board convened the Northern Spotted Owl Implementation Team (NSOIT). The NSOIT has been tasked to develop incentives for landowners to conserve northern spotted owl habitat, identify the temporal and spatial allocation of conservation efforts on non-federal lands, and make recommendations to the Board, should any rules need to be updated. The NSOIT is also conducting a pilot project testing different thinning prescriptions in northern spotted owl habitat. These efforts have evolved over years of collaboration and are designed to change the dynamic away from fear and resistance to partnership and participation. On November 13, 2012, the Board took another step for northern spotted owl conservation and expanded the scope of the NSOIT to investigate and recommend, in coordination with the Service, voluntary programmatic tools for private landowners to support northern spotted owl conservation and provide regulatory certainty for landowners (WDNR *in litt.*). This step further demonstrates Washington's willingness to use its authority and processes to support northern spotted owl conservation. The Service has and continues to provide funding to support the work of the NSOIT.

Benefits of Inclusion—The areas of private land retained in our final designation at issue here support both essential demographic and dispersal needs of spotted owls, and highlight the important conservation roles of private lands in Washington. Designation of these private lands may raise public awareness of conservation actions needed for spotted owl recovery, although the educational benefit of the designation is somewhat limited currently since these areas have already been identified as SOSEAs, since 1997.

We find there are minimal benefits to including these lands in critical habitat. The designation of critical habitat

invokes the provisions of section 7. Our Final Economic Analysis (IEC 2012b, p. ES–17) concludes that critical habitat designation for the northern spotted owl is unlikely to directly affect timber harvests on private lands in Washington because of the low likelihood that such harvests would be simultaneously connected to a Federal permitting or funding action. Without a pending Federal action, there is no basis for initiating a consultation process under section 7 of the Act. As discussed previously, the designation of critical habitat invokes the provisions of section 7. However, in this case, we find the requirement that Federal agencies consult with us and ensure that their actions are not likely to destroy or adversely modify critical habitat will not result in significant benefits to the species. The possibility of a Federal nexus for a project on these lands is small unless it was a larger project covering adjacent Federal lands as well, in which case section 7 consultation would already be triggered and the Federal agency would consider the effects of its actions on the species. In addition, most of the habitat on these private lands would be assumed to be occupied, further minimizing to some extent the margin of conservation that could be attained through section 7. Any incremental benefits would be further minimized because of the protections already in place In addition, it would be small in comparison to the benefits already derived under the WDNR FPR.

There is minimal incremental benefit from designating critical habitat for the northern spotted owl within private lands covered by the WDNR Forest Practices Rules (FPR) because these lands are already managed for the conservation of the species through the WDNR FPR. The conservation measures provided by that process will provide greater protection to northern spotted owl habitat than the designation of critical habitat, which provides regulatory protections only in the event of a Federal action. In addition, the final rule designation would provide for protection of fewer acres than the existing FPR. The WDNR FPR provides for the needs of the northern spotted owl by protecting and preserving landscape levels of suitable northern spotted owl nesting, roosting, and foraging habitat as well as foraging and dispersal habitat in strategic landscapes, and implementing species-specific conservation measures designed to avoid and minimize effects to northern spotted owls. The WDNR FPR also contains provisions that address ownership changes and provides for the ability to make ongoing adjustments in a number of forms, including active adaptive forest management. The ability to change is crucial to meet new recovery challenges. The Service continues to be work with WDNR to provide technical assistance in the implementation of these rules. The WDNR FPR contains provisions that address ownership changes and the outcomes expected by the Service. Therefore, designation of critical habitat would be redundant on these lands, and would not provide additional measureable protections.

Including lands in a critical habitat designation does serve to educate landowners, State and local governments, and the public regarding the potential conservation value of an area. This helps focus and promote conservation efforts by other parties by identifying areas of high conservation value for northern spotted owls. Designation of critical habitat would inform State agencies and local governments about areas that could be conserved under State laws or local ordinances, such as the Washington State Growth Management Act, which encourage the protection of ''critical areas'' including fish and wildlife habitat conservation areas. Any information about the northern spotted owl and its habitat that reaches a wider audience, including parties engaged in conservation activities, is valuable. However, WDNR, as the State's natural resource agency, is knowledgeable about the species and has made substantial contributions to our knowledge of the species. The additional educational and informational benefits that might arise from critical habitat designation here have been largely accomplished through the public review and comment during reviews of the FPR and associated with the modification of the FPR, and through implementation of the FPR by landowners. The existing public process for FPR development provides for extensive opportunities for engagement in the development and refinement of the rules. The FPR includes intensive public involvement and is frequently a topic of open and public discussion during meetings of the Washington State Forest Practices Board, whose meetings are open to the public and frequently televised. This level of exposure in local newspapers and television stations exceeds the level of education that would come from a designation that would be read by few people in the public. Moreover, the rulemaking process associated with critical habitat designation includes several opportunities for public comment, and thus also provides for public education.

Finally, there may be some ancillary benefits if the designation resulted in changed timber management practices on these private lands. These benefits could include but are not limited to: public safety benefits by increasing resiliency of timber stands, improved water quality, aesthetic benefits, and carbon storage. However, as discussed above, the possibility of a Federal nexus on these private lands is limited, so changes in timber management as a result of critical habitat, and any attendant ancillary benefits, are anticipated to be minimal.

Benefits of Exclusion—With regard to the benefits of exclusion from designation, although the final economic analysis (FEA) noted that one possible outcome of the critical habitat designation would be that the State could revise its regulations, and in a worst case scenario such revision could result in some private acres no longer being harvestable, we note that the likelihood of such revision actually occurring is characterized as speculative (IEC 2012b, p. 5–20). The FEA notes two possible outcomes of critical habitat designation, one being no change in Forest Practices Rules, the other is that State would revise their regulations and designate all suitable habitat overlapping with Federal critical habitat as ''critical habitat state.'' However, Washington DNR representatives only offered examples of potential responses to Federal designation of critical habitat in Washington, and did not comment upon the likelihood that any of these scenarios would occur (IEC 2012b, p. 5–11). The FEA also makes note of the potential indirect effects of critical habitat on private lands, in terms of private landowners possibly reacting by changing their timber harvest practices in response to perceived regulatory uncertainty as a result of critical habitat (IEC 2012b, p. 5–19).

In particular, a benefit of excluding lands covered under the WDNR FPR from critical habitat designation is that it would encourage the State and other parties to continue to work for owl conservation. If lands within the WDNR FPR area are designated as critical habitat, it would also likely have a negative effect on our ability to continue to partner with the WDNR on this conservation. In particular, the WDNR comment letter (WDNR 2012) states that if inclusion of private land is warranted, then WDNR requests that the Service ''create and bolster incentive based conservation opportunities for private landowners''. This recognizes the potential negative effects to their

existing collaborative approach. By excluding these lands, we preserve our current private and local conservation partnerships and encourage additional conservation actions in the future because other parties see our exclusion as a sign that the Service will not impose duplicative regulatory burdens on landowners who are already have a regulatory responsibility under the WDNR FPR. As described in Changes from the Proposed Rule, many of the small, private parcels were removed from the final designation upon a determination that they did not meet the definition of critical habitat. The remaining areas of private lands (40,732 ac; 16,483 ha) in Washington contained in this designation are private industrial forest lands; these private lands are not currently covered by HCPs or SHAs but are covered under the WDNR Forest Practices Rules (FPR). Of these, 37,000 ac (14,974 ha) occur within the spotted owl circles currently regulated by the existing FPR. It is unlikely that the benefit of overlaying an additional regulatory burden within the SOSEAs to protect an additional 4,000 ac (1,619 ha) would be a significant benefit within the range of the owl. Excluding these private lands from the designation would avoid a chilling effect on the partnership between the Service and the affected State regulatory agencies regarding administration of their existing conservation programs to protect and conserve northern spotted owls on private lands. We consider the maintenance of our partnership between the Service and the affected State regulatory agencies to be a significant benefit of exclusion.

Benefits of Exclusion Outweigh the Benefits of Inclusion—The benefits of including these lands in the designation are small. The WDNR FPR contains provisions for protecting and maintaining northern spotted owl habitat that provides for comprehensive measures applied across a large landscape that will benefit spotted owls. WDNR personnel are extremely knowledgeable regarding the ecology of the northern spotted owl and have contributed to the body of scientific information about the northern spotted owl. The landowners subject to these State regulations are also informed by them. In this instance, the regulatory and educational benefits of inclusion have much less benefit than the continued benefit of the WDNR FPR including the educational benefits derived from the FPR.

The WDNR FPR provides for significant conservation and management within geographical areas that contain the physical or biological features essential to the conservation of the northern spotted owl and help achieve recovery of this species. Exclusion of private lands already covered under the WDNR FPR will help foster the partnership we have developed with WDNR. Furthermore, this partnership may aid in fostering future cooperative relationships with other parties in other locations for the benefit of listed species.

In summary, we determine that the benefits of excluding private lands already covered under the WDNR FPR from the designation of critical habitat for the northern spotted owl outweigh the benefits of including this area in critical habitat. We find that including these lands would result in minimal, if any, additional benefits to the northern spotted owl, as explained above. The WDNR FPR includes species-specific avoidance and minimization measures, rule enforcement procedures, and forest-management practices and habitat conservation objectives that benefit the northern spotted owl and its habitat, which exceeds substantially minimizes the incremental any conservation value provided as a result of a critical habitat designation. Given the active and ongoing efforts of the State of Washington to address northern spotted owl conservation, we have determined that maintaining our partnership with WDNR, in conjunction with the conservation measures under the WDNR FPR, provides a greater benefit to the northern spotted owl than would the regulatory and educational benefits of critical habitat designation. We also have determined that the potential incremental educational and ancillary benefits of critical habitat designation on lands containing the physical or biological features essential to the conservation of the northern spotted owl would be minimal, because WDNR has already made significant contributions to our understanding of the ecology of the northern spotted owl, and continues to do so through implementation of Recovery Action 18 and through participation in range wide demographic studies.

Exclusion Will Not Result in Extinction of the Species—We have determined that exclusion of approximately 40,732 ac (16,483 ha) of private lands covered under the WDNR FPR will not result in extinction of the northern spotted owl. The WDNR FPR protects and preserves landscape levels of suitable northern spotted owl nesting, roosting, and foraging habitat as well as foraging and dispersal habitat in strategic landscapes, and implements species-specific conservation measures designed to avoid and minimize effects to northern spotted owls. The Board has adopted a Wildlife Work Plan that requires rule review and revision should new information warrant that. We find that exclusion of private lands currently covered under the WDNR FPR will not result in extinction of the northern spotted owl. Therefore, the Secretary is exercising his discretion under section 4(b)(2) of the Act to exclude these private lands from this final critical habitat designation that are currently covered under the WDNR FPR totaling about 40,732 ac (16,483 ha).

Congressionally Reserved Natural Areas and State Park Lands

Our decision to exclude congressionally reserved natural areas and State park lands from this rule is based on the unique circumstances associated with this critical habitat designation. Before making a final decision of whether to exclude congressionally and State reserved natural areas, we weighed the relative benefits and costs a designation of these lands would confer and compared them to the costs and benefits of no designation. Our final decision is that these areas are essential to the conservation of the northern spotted owl, but a designation of these areas in this particular case would confer no current or potential regulatory benefit and a very minor education benefit. The primary habitat threat to the northern spotted owl is from commercial timber harvest. Since commercial timber harvest is not allowed on these lands, there would be little benefit to additional section 7 consultation on effects to critical habitat. We also agree with the National Park Service that a designation would impose some, albeit relatively small, additional administrative costs to land managers who would need to consult with the Service if their actions or programs might affect northern spotted owl critical habitat. Likewise, we find that State Park lands could experience some additional minor administrative costs as a consequence of this designation, especially those State Parks jointly managed with Redwood National Park and those that may use Federal funding for research and monitoring or program and capital improvements. However, we find that even these minimal costs would outweigh the minor informational benefits of including these areas in the critical habitat designation.

Benefits of Inclusion—The proposed critical habitat rule published on March 8, 2012 (77 FR 14062), as part of ''Possible Outcome 3'' in Table 1 (p. 14068), proposed to exclude 2,631,736

ac (1,065,026 has) of congressionally reserved lands and 164,776 ac (66,682 ha) of State Park lands from final critical habitat. These Federal reserved lands include all National Parks and Monuments, Wilderness Areas, Wild and Scenic Rivers, National Scenic Areas, and other congressionally designated areas identified in the proposed rule. State Parks lands included Iron Horse State Park in Washington, and all or portions of 30 State Parks in California, including Jedediah Smith, Del Norte Coast, Prairie Creek, Grizzly Creek, Humboldt Redwoods, DeWitt Redwoods, Richardson Grove, Reynolds Wayside, Smithe Redwoods, Standish-Hickey, Wm. Standley, Russian Gulch, Mendocino Headlands, Mendocino Woodlands, Van Damme, Montgomery Woods, Navarro Redwoods, Hendy Woods, Mailliard, Salt Point, Austin Creek, Armstrong State Reserve, Tomales Bay, Samuel P. Taylor, Mount Tamalpais, Robert Louis Stevenson, Bothe—Napa Valley, Sugarloaf Ridge, Jack London, and Annadel State Park.

A primary purpose of these congressional and State reserved natural areas is to conserve natural ecosystems, including those of the northern spotted owl and its habitat, and educate the public regarding the conservation of these areas. Unlike other Federal and State lands that have multiple use mandates that include commercial harvest of timber in the range of the spotted owl, such as National Forests, State Forests, and forests managed by the BLM, these reserved natural areas are unlikely to have uses that are incompatible with the purposes of critical habitat because the primary threat to spotted owl critical habitat—commercial timber harvest—is prohibited on these lands. These natural areas are managed under explicit Federal and State laws and policies consistent with the conservation of the northern spotted owl, and there is generally little or no timber management beyond the removal of hazard trees or fuels management to protect structures, roads, human safety, and important natural attributes. For example, the Wilderness Act provides conservation for the northern spotted owl because it prohibits commercial activities unrelated to wilderness recreation. Thus, not only is commercial timber harvest directly barred on these Federal lands, but the Wilderness Act also precludes the construction of roads and most uses of mechanical equipment. 16 U.S.C. 1133. The fundamental purpose of the National Park System, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. This mandate is independent of the separate prohibition on impairment and applies with respect to all park resources and values, even when there is no risk that any park resources or values may be impaired. *See* 16 U.S.C. sections 1–4.

Similarly, all of the State Parks lands proposed for exclusion occur in California except for 104 ac (42 ha) in Washington. California State Parks are managed by the California Department of Parks and Recreation. This Agency's mission is to ''administer, protect, provide for recreational opportunity, and develop the State Park System * * *'' We are unaware of any commercial timber harvests in California or Washington State Parks.

Therefore, any habitat-disturbing activities that might occur as the land managers carry out their conservation programs (e.g., trail maintenance, education and outreach, operations and maintenance, etc.) are likely to be relatively minor and are unlikely to be regulated by a critical habitat designation. On the Federal reserved lands, the section 7 prohibition on the destruction or adverse modification of critical habitat would be redundant and unlikely to add any protection to these important habitat areas. Likewise, many of these State Parks have close working relationships with Federal agencies and may experience, through those Federal partners, a section 7 nexus or other administrative costs if the States utilize Federal funds or require a Federal permit for their activities. For example, several State Parks in California (i.e., Del Norte Redwoods, Prairie Creek Redwoods, and Jedediah Smith Redwoods) are jointly managed with Redwood National Park through an agreement signed in 1994. In the San Francisco Bay Area, the National Park Service manages an inventory and monitoring program that includes actions by State Parks and other Federal partners such as the U.S. Geological Survey. Further, land managers monitor spotted owl territories within these reserved areas as part of long term population monitoring efforts, and barred owl populations are also monitored as part of spotted owl recovery efforts. For example, spotted owl territories in Crater Lake National Park have been monitored since 1992, and there are multiple spotted owl monitoring and conservation efforts occurring in many these parks throughout the species' range. A critical habitat designation on these State Parks may introduce some additional administrative costs but confer no increase in regulatory protection. Therefore, we believe there would be no regulatory benefits to inclusion of these lands in critical habitat.

We also believe that a critical habitat designation for these specific natural areas would confer minimal additional educational benefit toward spotted owl conservation. These areas are generally well known for their value to the conservation of listed species due to the education and communication programs of the natural area management agencies during the time since the listing of the spotted owl. Educational materials are distributed and other communication programs occur regarding the conservation of late successional forests and the species that inhabit them such as the spotted owl (see, e.g., Olympic National Park Web site featuring spotted owl information at *http://www.nps.gov/olym/naturescience/animals.htm,* or *http://www.nps.gov/muwo/naturescience/life-of-spotted-owls.htm* for NPS lands in central California). We also note that the management agencies overseeing these congressionally and State reserved natural areas have a positive history of over 20 years of conserving northern spotted owls and supporting research and conservation of the owl on their protected lands. While in other cases we have found benefits where critical habitat would highlight the importance of the habitat to owl conservation for future planning and management purposes, in the case of these lands, management is already consistent with habitat protection. Therefore, it is unlikely that designation of critical habitat of these areas would provide any significant informational benefits to the land managers or the public.

Benefits of Exclusion—We attempted to quantify the potential increase in administrative costs for the Service associated with a proposed designation of critical habitat in congressionally reserved land allocations. There is generally little or no timber management beyond removal of hazard trees or fuels reduction to protect structures and road maintenance, in addition to fire-management activities. Management guidelines for congressionally reserved lands are generally protective, so we do not anticipate requesting any changes of proposed management as a result of a critical habitat designation, and we would not anticipate reaching an adverse modification determination. In reserve areas where we do consult, the designation of critical habitat would likely add an adverse-modification analysis to an existing consultation.

Total incremental effects would likely be about 4–6 hours of staff time per action for both the action agency and the Service, although this estimate could vary widely depending on the size and scope of the action.

The final economic analysis (FEA) (IEC 2012b) quantified this potential for an increase in administrative costs, and they described the potential indirect impacts due to time delays for project processing and regulatory uncertainty. The analysis states, ''While critical habitat is not expected to generate changes to forest management practices or to testing or training missions on NPS or DOD lands, these areas may be subject to new or increasingly complex section 7 consultations as a result of critical habitat designation. Activities that may involve section 7 consultations include the construction or maintenance of visitor facilities on NPS lands and access roads to projects or military training including the use of vehicles, explosives, and soldiers. DOD and NPS will likely experience an additional administrative burden to provide biological assessments for projects in consultations with the Service as a result of critical habitat designation'' (IEC 2012b, p. 4–4). The FEA forecast an additional 16 informal consultations with NPS on planned or ongoing recreation and habitat management projects (IEC 2012b, p. 4–27). (Although the text refers to the NPS lands, the same rationale generally applies to other federally reserved lands in the proposed exclusion.) The FEA did not quantify the potential for direct incremental economic impacts on State Park lands, but it does identify the potential for indirect impacts due to time delays and regulatory uncertainty. Again, it is expected that these impacts would be relatively minor, but they nevertheless are not offset by a proportional increase in conservation benefits that would accrue as a consequence of this critical habitat designation on these lands.

Benefits of Exclusion Outweigh the Benefits of Inclusion—In sum, we find there are no regulatory benefits and such minimal educational benefits to including these lands in the designation that they are outweighed by the minor increase in administrative costs. We reach this conclusion for several reasons: (1) A critical habitat designation of these reserved areas in the range of the spotted owl would provide no additional regulatory benefits beyond what is already on these lands due to their permanent status as fully protected lands and, importantly, the fact that commercial timber harvest is not permitted on these lands under Federal and State law and policy; (2) the designation of these reserve areas would confer little additional educational benefits associated with the conservation of the spotted owl, as these educational messages are already being communicated in many of these areas under existing programs; and (3) as identified by the economic analysis and the NPS, there is the potential for a small but measureable increase in administrative costs, time delays, and regulatory uncertainty for the Service and Federal and State land managers if these lands were designated, without any offsetting positive conservation benefits to justify the increased administrative costs.

After weighing these relative costs and benefits, the Secretary has chosen to exercise his discretion under Section 4(b)(2) of the Act to exclude these lands from final critical habitat. As part of this review we have determined the Federal agencies are managing these reserved natural areas under statutes that already impose a clear conservation mandate consistent with the specific needs of the northern spotted owl, and a critical habitat designation would confer no additional conservation benefits to the spotted owl that offset the potential increase in administrative costs. In making this decision, we also note the historic role of congressionally and State reserved natural areas as part of northern spotted owl critical habitat. In 1992, the Service concluded that certain congressionally reserved parks and wilderness areas were essential to spotted owl conservation, but we declined to include these lands in the final designation of critical habitat because their current classification and management was deemed adequate to meet spotted owl conservation goals (January 15, 1992; 57 FR 1796, p. 1806). Likewise, in 2008, the Service revised northern spotted owl critical habitat and again concluded that congressionally reserved natural areas would not be included in final critical habitat for the same reasons as those identified in the 1992 decision (August 13, 2008; 73 FR 47325, p. 47334). Although not a factor in this section 4(b)(2) weighing, this determination will maintain the consistent management approach for spotted owls that has occurred on these lands over the last 20 years and should minimize the potential for confusion among land managers and the public.

This analysis is based in large part on the particular conservation requirements of the northern spotted owl and is specific to this designation. Thus, our determination that the benefits of exclusion outweigh the benefits of inclusion in this case does not necessarily have a bearing on future critical habitat designations.

Exclusion Will Not Result in Extinction of the Species—We conclude that this exclusion of congressionally and State reserved natural areas would not result in the extinction of the species. As described above, all of these areas are managed under State and Federal law to provide for the conservation of species and their natural habitat, including the northern spotted owl. A critical habitat designation would not enhance or incrementally improve this dedicated management or increase the protections of these lands, nor would its absence somehow fail to provide protections that otherwise would not be present. Therefore, this exclusion of lands from final critical habitat would not result in any appreciable risk of extinction to the species because these lands will continue to be managed to provide for the conservation of the spotted owl.

Cumulative Analysis—Exclusion Will Not Result in Extinction of the Species

We have determined that exclusion of approximately 4,056,759 ac (1,641,777 ha) of lands from this final designation of critical habitat will not result in extinction of the northern spotted owl. We have excluded these areas based, in part, on the significant conservation benefits afforded to the northern spotted owl and its habitat on these lands through the positive conservation measures provided through SHAs, HCPs, or other agreements with private landowner partners with a proven track record of conservation actions. Each of these agreements, as discussed here, provides significant conservation benefits to the species in terms of maintaining, enhancing, or recruiting additional suitable habitat for the northern spotted owl, and implementing species-specific conservation measures designed to avoid and minimize impacts to northern spotted owls. Further, for projects having a Federal nexus and affecting northern spotted owls in the excluded areas, all of which are occupied by the species, the jeopardy standard of section 7 of the Act provides a level of assurance that this species will not go extinct as a result of excluding these lands from the critical habitat designation. The species is also protected by section 9 of the Act, which prohibits the take of listed species. Congressionally and State reserved natural areas excluded are managed under State and Federal law and policy to provide for the conservation of species and their natural habitat, including the northern spotted owl. These lands will continue to be

managed under a clear conservation mandate, and exclusion of these lands from critical habitat will not deprive the species or its habitat of any protections that are not already present. Although we did not assume that all private lands without specific conservation agreements would continue to fully provide for the conservation of the owl, we determined that the exclusion of these lands would not lead to the extinction of the species, due to existing State protections and the fact that the areas excluded constitute such a small percentage of the overall designation. For these reasons, we conclude that the exclusion of these areas under section 4(b)(2) of the Act will not cumulatively result in the extinction of the species.

Consideration of Indian Lands

In accordance with the Secretarial Order 3206, ''American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act'' (June 5, 1997); the President's memorandum of April 29, 1994, ''Government-to-Government Relations with Native American Tribal Governments'' (59 FR 22951); Executive Order 13175, ''Consultation and Coordination with Indian Tribal Governments'' (November 6, 2000, and as reaffirmed November 5, 2009); and the relevant provision of the Departmental Manual of the Department of the Interior (512 DM 2), we believe that fish, wildlife, and other natural resources on Indian lands may be better managed under Indian authorities, policies, and programs than through Federal regulation where Indian management addresses the conservation needs of listed species. In addition, such designation may be viewed as unwarranted and an unwanted intrusion into Indian self-governance, thus compromising the government-to-government relationship essential to achieving our mutual goals of managing for healthy ecosystems upon which the viability of threatened and endangered species populations depend.

In developing the proposed revised critical habitat designation for the northern spotted owl, we considered inclusion of some Indian lands. As described in the above section Criteria Used to Identify Critical Habitat, and detailed in our supporting documentation (Dunk *et al.* 2012b, entire), we evaluated numerous potential habitat scenarios to determine those areas that are essential to the conservation of the northern spotted owl. In all cases, we assessed the effectiveness of the habitat scenario under consideration in terms of its ability to meet the recovery goals for the species. Furthermore, the habitat scenarios under consideration included a comparison of different prioritization schemes for landownership; we prioritized areas under consideration for critical habitat such that we looked first to Federal lands, followed by State, private, and Indian lands. Indian lands are those defined in Secretarial Order 3206 ''American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act'' (June 5, 1997), as: (1) lands held in trust by the United States for the benefit of any Indian tribe or individual; and (2) lands held by any Indian Tribe or individual subject to restrictions by the United States against alienation. In evaluating Indian lands under consideration as potential critical habitat for the northern spotted owl, we further considered the directive of Secretarial Order 3206 that stipulates ''Critical habitat shall not be designated in such areas unless it is determined essential to conserve a listed species. In designating critical habitat, the Services shall evaluate and document the extent to which the conservation needs of the listed species can be achieved by limiting the designation to other lands.''

Although some Indian lands identified in our habitat modeling demonstrated the potential to contribute to the conservation of the northern spotted owl, our analysis did not suggest that these areas were essential to conserve the northern spotted owl. This determination was based on our relative evaluation of the various habitat scenarios under consideration; if the population performance results from our habitat modeling indicated that we could meet the recovery goals for the species without relying on Indian lands, we did not consider the physical or biological features on those lands, or the lands themselves, to be essential to the conservation of the species, therefore they did not meet our criteria for inclusion in critical habitat. Our evaluation of the areas under consideration for designation as critical habitat indicated that we could achieve the conservation of the northern spotted owl by limiting the designation of revised critical habitat to other lands. Therefore, no Indian lands are included in the revised designation of critical habitat.

XII. Summary of Comments and Responses

We requested written comments from the public on the proposed revised designation of critical habitat for the northern spotted owl during an initial 90-day public comment period, which opened with the publication of the proposed revised rule on March 8, 2012 (77 FR 14062), and closed on June 6, 2012. On June 1, 2012, we published the notice of availability of the draft economic analysis and draft environmental assessment associated with the proposed revised designation of critical habitat (77 FR 32483), and extended the comment period for the proposed rule an additional 30 days, through July 6, 2012, thereby providing a total comment period of 120 days. In addition, we held two public information meetings in Redding, California on June 4, 2012; two in Tacoma, Washington, on June 12, 2012; one in Portland, Oregon on June 20, 2012; and two in Roseburg, Oregon, on June 27, 2012. We also held a public hearing in Portland, Oregon, on June 20, 2012. In addition, we contacted appropriate Federal, State, County, and local agencies; scientific organizations; and other interested parties and invited them to comment on the proposed rule, draft economic analysis, and draft environmental assessment during these comment periods. In addition, in response to requests from several Counties, and to ensure that all affected Counties and State fish and wildlife agencies in Washington, Oregon, and California were able to thoroughly review and comment as provided by section 4(b)(5)(A)(ii) of the Act, the Service provided an additional opportunity for those entities to comment until August 20, 2012.

During the comment period(s), we received over 33,000 comments (many of which were form letters), directly addressing the proposed revised critical habitat designation. During the June 20, 2012, public hearing, eight individuals or organizations provided comments on the proposed revised designation. All substantive information provided by commenters has either been incorporated directly into this final designation or addressed below. Comments received were grouped into general categories specifically relating to the proposed revised critical habitat designation, and are addressed in the following summary, and incorporated into the final rule as appropriate. We received a number of highly technical comments regarding the modeling process used to develop critical habitat. These technical questions are addressed in the final Modeling Supplement (Dunk *et al.* 2012b) rather than in the following section. We also received several comments regarding perceived effects attributed to the original listing of the northern spotted owl (June 26, 1990; 55 FR 26114), but are not addressing those comments because

they do not apply to this rulemaking, which is limited to the revised designation of critical habitat for the northern spotted owl.

Comments From Peer Reviewers

In accordance with our peer review policy published on July 1, 1994 (59 FR 34270), we solicited expert opinions from 40 knowledgeable individuals with scientific expertise that included familiarity with the species, the geographic region in which the species occurs, and conservation biology principles. We received responses from 15 of the peer reviewers.

We reviewed all comments received from the peer reviewers for substantive issues and new information regarding critical habitat for the northern spotted owl. The peer reviewers generally supported the modeling process used to inform the identification of critical habitat and the resulting size and distribution of the proposed revised designation. Reviewers were divided on the risks posed by climate change and forest health, and whether active management should be applied within critical habitat.

We asked reviewers to address a number of specific questions with regard to the proposed rule. The questions posed to the peer reviewers and a summary of their responses are provided below; peer reviewer comments, clarifications, and suggestions have been incorporated into the final rule as appropriate. Our responses to issues raised by the peer reviewers are presented in the subsequent summaries of comments and responses.

Question 1a: Given the assumptions about barred owl effects, does this critical habitat network provide a sufficient amount and distribution of habitat for the northern spotted owl?

Peer Review Response: Of the seven reviewers who provided a response to this question, four indicated that it was impossible to determine whether the critical habitat network was adequate with barred owls present across the area. Two reviewers believed the network was adequate, and one believed it was too small given barred owl impacts.

Question 1b: Have the physical or biological features that are essential to the conservation of the owl been properly described? Do the areas identified as proposed critical habitat adequately capture these features? Are there areas we identified that should not be included in the designation?

Peer Review Response: Of the five reviewers who addressed this question, all believed the physical or biological features were properly described. A number of these reviewers did have suggestions for revising descriptions of these features in specific forest types and we have incorporated these suggestions into the final rule.

Question 2: Does the critical habitat network adequately encompass the geographic range of the northern spotted owl and represent the range of habitat types used by the species?

Peer Review Response: Only three reviewers specifically addressed this question. All agreed that the network encompassed the geographic range and habitat types used by owls. One reviewer expressed concern that additional lands in the southwest Washington lowlands should be included to improve landscape connectivity, and a second reviewer indicated that maintaining areas of marginal habitat where northern spotted owls could persist in the face of encroachment by barred owls may be particularly important. See our response to *0* for a detailed discussion regarding inclusion of lands in southwest Washington and inclusion of marginal habitat.

Question 3: We have identified areas on Federal lands in the ''Matrix'' classification (i.e., areas designated for timber harvest under the NWFP) as proposed critical habitat, as well as some State and private lands where Federal lands are lacking. Do you agree or disagree with this approach? Why or why not?

Peer Review Response: Eight reviewers addressed this question, and all agreed that inclusion of matrix lands in critical habitat was supported. One reviewer noted that the barred owl issue needs to be addressed (see response to *0* for detailed discussion of this issue), and another reviewer was surprised that all habitat-capable lands in the western portion of the species' range were not included in critical habitat (see *0* for a more detailed discussion of this issue).

Question 4a: Does the proposed rule appropriately cite the scientific literature on ecological forestry to recommend restoration of ecological processes and the conservation of late-successional forests while also providing sufficient habitat conservation for northern spotted owls?

Peer Review Response: Ten reviewers addressed this issue. Most supported the idea that land managers consider the application of ecological forestry principles. Five believed the rule cited appropriate literature, and several other expressed general support, but recommended consideration of additional published research. Three reviewers disagreed with some of the science that was cited, or the interpretation of that science, and noted that the discussion did not adequately address studies that have documented negative effects of timber management on northern spotted owls and their prey. Several reviewers recommended that active management should be conducted in an adaptive management framework. We addressed these issues in revisions to the section *An Ecosystem-based Approach to the Conservation of the Northern Spotted Owl and Managing Its Critical Habitat.*

Question 4b: Do the proposed guidelines for vegetation management, including forest fuels treatments and restoration of fire regimes, represent an appropriate application of ecological science?

Peer Review Response: Responses to this question were varied. Eight reviewers expressed overall support for the concept, although several recommended providing more specific management information. Four reviewers indicated that parts of the document were unclear on whether ecological science was applied appropriately, and highlighted the lack of understanding about how such management actions may affect owls and their prey. Two reviewers specifically indicated that they did not think that approach is appropriate. Several recommended conducting active management activities in an adaptive management framework, until the science becomes clearer regarding how northern spotted owls are affected by projects intended to restore forest health or apply ecological forestry principles. We addressed active adaptive forest management in the section *An Ecosystem-based Approach to the Conservation of the Northern Spotted Owl and Managing Its Critical Habitat.*

Question 4c: Do you believe the proposed rule appropriately balances the potential risks of taking action with the potential risks of a passive (i.e., ''no action'') management approach, especially in the face of ongoing climate change and the need to manage for the entire forest ecosystem, not just northern spotted owls?

Peer Review Response: Peer reviewers were split in their opinions on this question, and responded with varying degrees of specificity. Eight reviewers generally supported the suggestion that land managers consider an active management approach in managing forest landscapes, although not all stated whether the discussion of this concept in the proposed rule balanced the respective tradeoffs. Five reviewers believed that the risks were not appropriately balanced, that the

discussion was too vague in weighing the tradeoffs, or that there is too little specific scientific understanding of the explicit tradeoffs to conduct an informed discussion. Several of these reviewers indicated that there was too much emphasis on active management in the preamble to the proposed rule given the lack of understanding about how ecological forestry and restoration management might affect owls. In contrast, one reviewer noted that the consequences of not applying management in some areas (e.g., fire-prone areas) were not sufficiently addressed. We have addressed the need to conduct additional research in an adaptive management framework in the section *An Ecosystem-based Approach to the Conservation of the Northern Spotted Owl and Managing Its Critical Habitat.*

Question 5a: Is there relevant information available we did not incorporate into the critical habitat modeling process (thoroughness), and have we interpreted the existing scientific information in a reasonable way (scientific consistency)?

Peer Review Response: The 15 reviewers generally agreed that we did include the appropriate information and interpreted it in a reasonable way. Recommendations to incorporate more realistic barred owl encounter rates, use individual home ranges rather than pair ranges in the modeling process, and analyze the effects of proposed exclusions were suggested. We address these issues in our responses to *Comment (11), Comment (38),* and *Comment (139).* One reviewer questioned the accuracy of GNN data for identifying northern spotted owl habitat. We address the question regarding the accuracy of GNN data in our response to *Comment (19*). In addition, some reviewers asked for more detail regarding the modeling process. Many of the responses to comments provided here present such detail, and we have incorporated additional discussion in our separate Modeling Supplement (Dunk *et al.* 2012b).

Question 5b: The modeling process attempted to incorporate both scientific uncertainty and demographic (stochastic) variation. Were methods used to incorporate uncertainty and variability appropriate?

Peer Review Response: Six reviewers addressed this question specifically. Most had suggestions for improving our methods including addressing temporal variation in demographic rates, providing confidence intervals on estimates, and conducting sensitivity analyses. We address specific comments in more detail in the Modeling Comments section below, as well as in our separate Modeling Supplement (Dunk *et al.* 2012b).

Question 5c: Does the proposed critical habitat rule correctly express the key assumptions and uncertainties underlying the scientific and technical information it used, particularly in regard to northern spotted owl habitat, demographic trends, and influence of barred owls on northern spotted owls?

Peer Review Response: In general, the reviewers agreed that the rule did address key assumptions and uncertainties; however, most identified specific areas these could be improved. We address these comments in more detail in the Modeling Section below, as well as in our separate Modeling Supplement (Dunk *et al.* 2012b).

Question 5d: Was the combination of analytical methods (MaxEnt, Zonation, HexSim) with professional judgment (please see Criteria Used to Identify Critical Habitat, pp. 14096–14101 in the proposed rule (March 8, 2012; 77 FR 14062) for details) appropriate for identifying critical habitat? Are there additional analyses you would recommend?

Peer Review Response: Of the 15 peer reviewers, 1 thought that HexSim was not an appropriate model given its complexity, and 2 expressed concern about the utility of the MaxEnt model for identifying habitat. The majority of peer reviewers thought that the combination of analytical methods we used was appropriate. We address the question regarding the use of HexSim and MaxEnt in our responses to *Comments (20, 21, 22, 26, and 43)* as well as in our separate Modeling Supplement (Dunk *et al.* 2012b).

A number of peer reviewers had additional comments about the concept of active management. Since the preambles to the proposed and final rules discuss this concept, we have addressed their comments below. However, we emphasize that this rule does not take any action or adopt any policy, plan or program in relation to active forest management. The discussion is provided only for consideration by Federal, State, and local land managers, as well as the public, as they make decisions on the management of forest land under their jurisdictions and through their normal processes.

Additional peer reviewer comments are addressed in the following summary and incorporated into the final rule as appropriate.

Comments on Lands Included in Critical Habitat and Exclusions

Comment (1): Several reviewers commented that proposed critical habitat failed to include habitat that linked the Olympic peninsula to other regions, and also did not include low-elevation habitat along the margins of the Willamette Valley, Puget Trough, Umpqua Valley, and Rogue River Valley. Some reviewers indicated that they thought this was a fault of the modeling methods used.

Our Response: There are multiple reasons why the areas described in the above comments were not included in the revised critical habitat. First, the habitat model using MaxEnt was at the 500-ac (200-ha) scale, and was thus unlikely to identify small, isolated habitat fragments. This is not a failure of the modeling, but rather a consequence of these areas (identified in the comments) having very little northern spotted owl habitat; such small, fragmented areas do not meet our criteria for critical habitat, and are therefore not included in final the critical habitat designation. Second, to incorporate additional information such as connectivity and unique forest situations, the Service also utilized expert knowledge and current owl location data (among other factors) to determine what is essential for conservation of the species. In Phase 3 of the critical habitat development process, as described in Dunk *et al.* 2012b, we evaluated areas where connectivity appeared to be deficient, and added in habitat to strengthen connectivity. However, most of the areas identified in these comments (particularly in western Washington) consist largely of cutover industrial timberlands, are not occupied by northern spotted owls, do not contain the primary constituent elements for critical habitat, and are not otherwise essential to the conservation of the species because they do not provide high-quality habitat or areas where restoration of habitat is need to provide essential connectivity or demographic support. These areas were not included in the 1992 or 2008 critical habitat designations for the same reasons. Without additional information about the location and habitat conditions of specific parcels in the areas mentioned in this comment, we are unable to further evaluate the benefits of including them in the revised designation.

Comment (2): One reviewer questioned the fact that portions of several late-successional reserves (LSRs) including a portion of the Okanogan-

Wenatchee National Forest in the eastern Washington Cascades and lands in the Western Klamath region that were affected by the Biscuit Fire were not included in the critical habitat proposal.

Our Response: Both of the areas described in this comment generally exhibit low relative habitat suitability (RHS) values. The portion of the Okanogan-Wenatchee LSR that was not included contains much high-elevation forest and dry forest seldom occupied by the northern spotted owl. The Biscuit Fire area described by the reviewer is composed of low RHS due to a combination of fire effects and ultramafic soils.

Comment (3): One peer reviewer and several public commenters were concerned about congressionally reserved areas not being included in proposed critical habitat.

Our Response: All congressionally reserved lands that met the criteria for critical habitat were included in the proposed revised designation. We sought public comment on whether they should be excluded from the final critical habitat designation. Based on further analysis and public comment, they are excluded in the final revised critical habitat designation. Our final decision is that these areas are essential to the conservation of the northern spotted owl, but as these areas are managed under a conservation mandate that provides for the needs of the northern spotted owl, we could find no benefits to the designation that outweighed the minor administrative costs associated with including these areas. Therefore the benefits of exclusion outweighed those of inclusion, and since such exclusion will not result in the extinction of the species, these congressionally reserved areas have been excluded from the final designation.

Comment (4): Several reviewers highlighted the importance of keeping State lands, congressionally reserved lands, and some private lands without HCPs or other agreements in critical habitat.

Our Response: We agree that these lands are important for the conservation of northern spotted owls. However, Federal parks and wilderness areas (and any other congressionally reserved lands) including State parks, as well as private lands, have been excluded in the final revised designation of critical habitat for the northern spotted owl. Some State lands are included in the final critical habitat designation, unless such lands had an HCP, SHA, or other conservation measures in place that led to their exclusion under section 4(b)(2) (see Exclusions).

Comment (5): Several reviewers indicated that the largest reserve designs may be the best for northern spotted owl conservation.

Our Response: Designation of critical habitat is constrained by the statutory language in section 3(5) of the Act, which states that critical habitat must either have been occupied by the species at the time it was listed and contain the physical or biological features essential to the conservation of the species, or, if unoccupied at the time of listing, be essential to the conservation of the species. Furthermore, section 3(5)(c) of the Act specifies that except in rare circumstances, critical habitat should not include the entire geographical area which can be occupied by the species. We concur that in areas where high-quality habitat is lacking, designating all areas capable of developing in to suitable habitat in the future might provide more robust networks. However, the addition of large areas of currently unsuitable habitat as suggested in this comment would likely not meet the intent and mandate of the statute. If occupied at the time of listing, such lands would not provide the requisite essential features. If unoccupied at the time of listing, such lands would only be included in critical habitat if we found them to be essential to the conservation of the species. Our evaluation of various potential habitat networks as we developed this critical habitat designation demonstrated that these lands are not likely to contribute substantially more owls to the rangewide population than the area designated as final critical habitat, thus we did not consider them to be essential to the conservation of the species.

Comment (6): One reviewer stressed the need to retain Recovery Action 10 and 32 lands in critical habitat.

Our Response: Recovery Action 10 and Recovery Action 32 do not constitute specific areas of mapped lands that could be included in critical habitat designation. Rather, they are broad landscape-level conservation recommendations contained in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) for identification and conservation of important habitats that apply to all land ownership categories and Federal land management allocations, including designated critical habitat. While consistency with these and other recovery actions is not required, Federal land management agencies generally try to conduct activities in a manner consistent with the guidance provided in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011).

Comments on Competition From the Barred Owl

Comment (7): One reviewer indicated that recovery efforts need to focus on barred owl management in addition to critical habitat.

Our Response: Barred owls and loss or degradation of habitat are primary factors impacting northern spotted owls. As we noted in the proposed critical habitat rule, habitat protection is necessary, but not sufficient alone, to recover the northern spotted owl. This revised designation of critical habitat is only one of many conservation actions that will contribute to the recovery of the northern spotted owl. The Service is currently working on a final environmental impact statement under NEPA for experimental barred owl removal to address the threat posed to northern spotted owls by the barred owl. Nonhabitat-based threats, such as barred owls, are specifically addressed in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011), and do not fall within the scope of this critical habitat rule. The Revised Recovery Plan, not this critical habitat rule, should be considered the comprehensive recovery document for the northern spotted owl.

Comments Regarding the Northwest Forest Plan (NWFP)

Comment (8): Several reviewers indicated that the relationship between proposed critical habitat and the Northwest Forest Plan was unclear.

Our Response: We have attempted to clarify the language regarding the relationship between critical habitat and the Northwest Forest Plan (NWFP). The NWFP provides land management guidance for most of the Federal lands identified as critical habitat, and we anticipate that the Standards and Guidelines for the NWFP will continue to direct management actions on these lands, unless amended sometime in the future. We emphasize that critical habitat does not replace or supersede the Standards and Guidelines of the NWFP. Active management is discussed in the preamble of this rule only to encourage land managers to consider the range of management flexibility already contained in the NWFP. We acknowledge the importance of the NWFP as a management strategy for conserving northern spotted owls and late-successional forest habitat, and our suggestions for special management considerations needed to address the threats to the physical or biological features essential to the conservation of the northern spotted owl (see Special Management Considerations or

Protections, above) are consistent with the directives of the NWFP.

Comment (9): One reviewer noted that LSR areas and locations on the East Cascades were designed under the assumption of static landscapes, not the dynamic landscapes we now recognize.

Our Response: We have recognized that the Standards and Guidelines for management under the NWFP differ across eastern and western forests, and that eastern forests are very dynamic. This condition was recognized in the NWFP, and the Standards and Guidelines of the NWFP allow for active management in such areas (USDA and USDI 2004, pp. C–12—C–13).

Comments on the Modeling Process

Here we provide a summary of general comments received on the modeling process that we used, in part, to identify revised critical habitat for the northern spotted owl. The habitat modeling framework we utilized was originally developed for the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011), and Appendix C of the Revised Recovery Plan provides a detailed description of the modeling framework and the extensive testing and cross-validation that was done at each stage of development. In addition, we note that the modeling framework that we applied here to assist in the identification of critical habitat for the northern spotted owl was independently the subject of prior peer review and public comment for the recovery plan. Particularly detailed or technical comments on the habitat modeling that we received in relation to this critical habitat rule are addressed separately in our Modeling Supplement, Dunk *et al.* 2012b, in an effort to reduce the length and improve the readability of this rule.

Comment (10): One reviewer suggested that the modeling of habitat networks and scenarios should consider a wider range of options or composites with greater emphasis on sustainability of owl populations, not efficiency. The present document is biased in favor of efficiency, not conservation of old forest habitat.

Our Response: We evaluated each of the potential critical habitat networks with respect to the guiding principles we developed, which were based on the statutory definition of critical habitat and informed by the recovery criteria for the northern spotted owl as established in the 2011 Revised Recovery Plan. The recovery criteria for the northern spotted owl are aimed at achieving sustainable northern spotted owl populations across the range of the species. In terms of identifying critical habitat, we use the term ''efficient'' to convey that we sought to include the highest-quality habitat with the greatest potential contribution to recovery and minimize as much as possible the amount of relatively lower quality habitat in determining what is essential to conservation of the species. In areas of insufficient high-quality habitat, lower quality habitat may still provide the PCEs and may be essential in terms of providing sufficient habitat overall to sustain the population. We also sought to rely on public lands to the extent possible.

Efficiency never trumped owl performance in our selection process; the population performance of the northern spotted owl in response to the scenarios evaluated was our first concern. However, given two or more nearly equal population performance outcomes, we did look for efficient solutions; that is, given the choice between two nearly equivalent habitat networks in terms of northern spotted owl population performance, we chose the network that achieved roughly the same level of performance provided by a relatively greater proportion of public lands or smaller overall designation. Old forest habitat and areas of high RHS are nearly identically represented in the largest networks we evaluated (Z70, Composites 1, 3, 4, and 7).

Comment (11): One reviewer suggested the use of individual, rather than pair home range size estimates in the HexSim model.

Our Response: Because our spotted owl population model is a females-only model, it was most appropriate to use individual home range sizes. Thus our model will not simulate the resource constraints that could result from male owl's consumption of limited food resources. We strove to construct the simplest model structure that captured the essential ecological processes; doing so made our northern spotted owl model more straightforward to develop and easier to understand. We evaluated how well the HexSim model was calibrated to actual populations, by comparing simulated spotted owl populations from our model with actual densities of northern spotted owls as measured within demographic study areas (Appendix C, p. C–73). We found that simulated populations were quite similar to actual populations, suggesting that the females-only model produced reasonably accurate estimates. Finally, because we used the HexSim model to compare the relative differences in population size resulting from different reserve design assumptions, any biases that may have been introduced into the process from the use of a females-only model would essentially be zeroed out, since that bias would be the same across all populations; in such a case, the net relative difference would still be accurately reflected between populations.

Comment (12): One reviewer noted that we did not include baseline scenarios that provide clear insight concerning the contributions that State, private, and Indian lands might make in the long run. They note that excluding consideration of some large areas by virtue of land ownership may have attendant effects on demographic results by inadvertently imposing ''pinch points'' along the north-south axis of the critical habitat area. The main concern was that northern spotted owl recovery may be quite limited by the initial assumptions made about excluding State, private, and Indian lands based on their current conditions; remaining alternatives considered may all be poorer as a result.

Our Response: We did not make initial assumptions about the population contributions potentially made by State, private, and Indian lands, or about the feasibility of including those lands in proposed critical habitat. Our initial comparisons of Zonation-derived reserve designs included both ''ALL lands'' and ''PUBLIC lands'' scenarios (Appendix C, p. C–49–52); these habitat networks did not restrict our evaluation to particular land ownerships, but allowed us to evaluate all lands regardless of ownership. Thus, we evaluated the contribution of all land ownerships before narrowing down the habitat network designs based on policy and cost-benefit analyses (meaning the weighing of relative population performance versus total area in the designation), as fully described in our Modeling Supplement (Dunk *et al.* 2012b). As discussed in this rule and in that supplement, we sought to maximize the reliance on public lands to the extent possible, but only if it did not compromise the population metrics essential to conservation of the northern spotted owl. In addition, as described in the section Consideration of Indian Lands, we conducted this analysis in accordance with the Secretarial Order 3206 directive to consider ''the extent to which the conservation needs of the listed species can be achieved by limited the designation to other [non-Indian] lands.'' As we did not identify any Indian lands that were essential to the conservation of the northern spotted owl, we did not include any such lands in the designation.

Comment (13): One reviewer asked whether foraging habitat was considered

separately from nesting/roosting habitat in the Step 1 modeling, or if suitable habitat was modeled as nesting/roosting/foraging?

Our Response: Foraging habitat was separate from nesting/roosting habitat, as explained in Appendix C to the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011, p. C–24).

Comment (14): One reviewer noted a potential failure to acknowledge the importance of winter migration behavior to spatial and habitat requirements of territorial northern spotted owls.

Our Response: We attempted to incorporate some degree of winter habitat requirements by using annual home ranges in HexSim. To our knowledge, the data we could use in HexSim to incorporate broader movements does not exist throughout the northern spotted owl's range. To the extent that northern spotted owls move away from their territories during the nonbreeding period, and if habitat use differs appreciably in the breeding season and nonbreeding season, it is possible that our approach did not include all areas that may be important to northern spotted owls. However, we are unaware of a consistent methodology that we could use to overcome this potential shortcoming.

Comment (15): One reviewer requested that we consider the effects of fire in the modeling process used to define critical habitat, and how critical habitat should be protected from the effects of fire.

Our Response: Our process incorporated several different possible vegetation growth and loss scenarios, and modeled a variety of potential northern spotted owl responses to differing management strategies. These scenarios were based on observed rates of habitat change measured between 1996 and 2006. As such, they incorporate habitat loss to fire and other causes, and project it into the future as a rate of change. We considered explicitly modeling fire probabilities and fire effects into the scenarios, but the complexity and high degree of uncertainty made this unfeasible. Incorporating fire impacts would have had a similar proportional effect to the relative outputs of each modeled scenario, thereby not elucidating real differences between the effectiveness of the modeled scenarios. The question of protecting critical habitat from the effects of fire is beyond the scope of this rulemaking.

Comment (16): One reviewer suggested that estimating the rate of population change (λ, or lambda) at 10-year intervals makes interpretation more difficult, especially with respect to the results from demographic studies, where λ is estimated as an annual interval.

Our Response: Our use and estimate of the finite rate of population change was not intended to be compared to estimates from demographic study areas or the meta-analysis (e.g., Forsman *et al.* 2011). We used lambda as one basis for comparison between the various alternative potential critical habitat networks considered to determine what is essential to the conservation of the northern spotted owl, using different assumptions related to the barred owl and the amount of suitable habitat. Thus, our use of lambda at 10-year intervals was appropriate for our intended use of relative population performance between habitat scenarios under consideration.

Comment (17): One reviewer indicated that one aspect that seemed to be lacking in the designation of critical habitat was whether the model correctly predicted areas currently occupied by northern spotted owls based on relative habitat suitability. The reviewer suggested that one way to accomplish this would be to examine the spatial distribution of critical habitat in relation to the existing demographic study areas and other areas with a history of surveys for northern spotted owls.

Our Response: To evaluate how well the modeling process identified areas likely to be occupied by northern spotted owls, we tested the predictive ability of the model by comparing our RHS model outputs with the distribution of known northern spotted owl locations (independent data sets) from the years 1996 and 2006, and in both cases found a high predictive accuracy. The results of this comparison are presented on pages C–38 to C–41 in Appendix C of the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011).

Comment (18): One reviewer indicated that the models are likely to be ''overfit'' (an overfit model that is overly sensitive to small fluctuations in data inputs, and will consequently have poor predictive results), even though cross-validation results by modeling region showed that all models were relatively robust to prediction (Table C19, Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011)). The reviewer indicated that this point needs to be more clearly disclosed. Several commenters expressed concern about the number of covariates in the RHS models, and the potential for overfitting.

Our Response: We carefully evaluated the modeling procedures we used to identify spotted owl habitat and test the resulting models using both cross-validation and independent data sets. Based on the results of our evaluations, we disagree that our models are overfit. We have clarified the procedures used and results of model testing in the final Modeling Supplement (Dunk *et al.* 2012b). MaxEnt is designed to reduce the effects of the potential model overfitting through its use of regularization. The main consequence of overfitting that we wished to guard against was that of having models so tightly fit to the training data that they were not generalizable (i.e., that they did not work well at classifying test data or data that did not contribute to the model's development). Our extensive cross-validation (randomly removing 25 percent of the data, each of 10 times within each modeling region) and evaluation of each model's full and cross-validated performance revealed that the models were not overfit (see Table C–16). Furthermore, where we had adequate independent data, the models performed almost identically on them as on the training data (see Table C–17). We share the reviewers concerns with overfitting models, and we directly evaluated whether the consequences of overfitting were realized and found that they were not. Thus, the conclusions on page C–41 of the Revised Recovery Plan (USFWS 2011) under ''Model evaluation summary'' remain valid.

Comment (19): Some reviewers and commenters suggested that the GNN database used to develop the relative habitat suitability (RHS) map is inappropriate for use in designating critical habitat because it does not depict what actual vegetative components exist on the ground but is a computer simulation of what might exist. The reviewer stated that since the base vegetation layer does not accurately represent stand conditions on the ground, it is impossible to show what stands contain PCEs and which do not. Several reviewers suggested that a formal accuracy assessment of the GNN data is needed and suggested that model predictions of habitat conditions should be verified. One reviewer indicated that inaccuracies in the GNN database probably led to errors with MaxEnt predictions of owl distributions. The reviewer suggested that there is little science to support the assumptions that GNN data for vegetative variables believed to be important to northern spotted owls were equally accurate across modeling regions, and there is little certainty that relevant processes were sufficiently captured so as to reliably predict owl population performance. The reviewer further

claims the Service did not assess the accuracy of the GNN data. Finally, the reviewer states that Dr. Larry Irwin, National Council for Air and Stream Improvement (NCASI) conducted an analysis of how well the GNN–LT data correlated with actual measurements on the ground, and concluded that there is a very low correlation between GNN–LT predictions and reality. Further, the reviewer states that GNN–LT was developed for mid- to large-scale spatial analysis, not the designation of critical habitat.

Our Response: We concur that the RHS models and subsequent modeling steps are dependent on the reliability of the GNN vegetation layer. A description of our use of GNN and accuracy assessments for the GNN variables used in our RHS models are presented in detail on pages C–16 to C–19 of the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011). Based on our data needs, these accuracy assessments, and independent verification of the performance of GNN estimates, we have determined that GNN represents the best scientific information available for habitat modeling throughout the range of the northern spotted owl.

As described in detail in Appendix C, we selected the GNN vegetation database for a number of reasons; most importantly it is the layer developed for use in the Northwest Forest Plan monitoring program. In addition, it is the only vegetation layer available that covers all land ownerships across the entire range of the northern spotted owl. Past efforts to model, map, and quantify habitat selection by northern spotted owls at regional scales have often suffered from lack of important vegetation variables, inadequate spatial coverage, or coarse resolution of available vegetation databases (Davis and Lint 2005). To develop rangewide models of relative habitat suitability for northern spotted owls, we required maps of forest composition and structure of sufficient accuracy to allow discrimination of attributes used for nesting, roosting, and foraging by northern spotted owls (the essential physical or biological features). GNN, developed for the NWFP's effectiveness monitoring program, provides detailed maps of forest composition and structural attributes for all lands within the NWFP area (coextensive with the range of the northern spotted owl). Although the GNN approach is a method for predictive vegetation mapping, it is based on input of empirical forest attribute data from inventory plots (Forest Inventory and Analysis, current vegetation analysis, etc.) and modeled relationships between plots and predictor variables from Landsat thematic mapper imagery, climatic variables, topographic variables, and soil parent materials.

The GNN maps come with a large suite of diagnostics detailing map quality and accuracy; these are contained in model region-specific accuracy assessment reports available at the LEMMA Web site (*http://www.fsl.orstu.edu/lemma/*). Accuracy assessments apply to the GNN model(s), rather than the satellite imagery. We provide Pearson correlation coefficients of GNN structural variables used in Table C–1 of the Revised Recovery Plan (USFWS 2011, pp. C–18 to C–19), and local accuracy assessments (kappa coefficients) for individual species' variables in Table C–2. For developing models of northern spotted owl habitat, we generally selected GNN structural variables with plot correlation coefficients greater than 0.5 for an individual modeling region (42 percent had correlation coefficients greater than 0.7). On a few occasions when expert opinion or research results suggested a particular variable might be important, we used variables with plot correlations from 0.31 to 0.5. For species composition variables, we attempted to use only variables with kappas greater than 0.3. However, because we combined species' variables into groups that expert opinion and research suggested may represent influent community types, we occasionally accepted variables with kappas greater than 0.2 and less than 0.3 for individual variables within a group.

The GNN vegetation database was specifically developed for mid-to large-scale spatial analysis, suggesting that accuracies at the 30-m pixel scale may be less influential to results obtained at larger scales. Because we were interested in the utility of GNN at our analysis area (500 ac (200 ha)) spatial scale, we additionally conducted less formal assessments where we compared the distribution of GNN variable values at a large sample of actual locations (known northern spotted owl nest sites and foraging sites) to published estimates of those variables at the same scale. In addition, we received comparisons of GNN maps to a number of local plot-based vegetation maps prepared by various field personnel. Based on these informal evaluations, we determined that GNN represents a dramatic improvement over past vegetation databases used for modeling and evaluating northern spotted owl habitat, and used GNN maps as the vegetation data for our habitat modeling.

Our primary objective in Step 1 of the modeling process was to develop MaxEnt models that perform well at predicting northern spotted owl habitat by developing models that had good discrimination ability, were well calibrated, were robust, and had good generality. Our detailed evaluations of model performance, cross-validation, and comparison with independent data sets (described in pages C–30 to C–41 in Appendix C of the Revised Recovery Plan) demonstrate that at the scale MaxEnt models were developed and evaluated, we met these objectives. Acknowledging that all vegetation databases will exhibit some degree of error, if the GNN layer was inadequate for predicting northern spotted owl habitat, we would not expect the reliable predictive models that we obtained. Thus, as described above, given our data needs, we believe the GNN database represents the best available information for the purposes of identifying critical habitat for the northern spotted owl. We are unaware of any alternative existing scientific information, and no viable suggestions were offered by reviewers or commenters.

Comment (20): One reviewer indicated that inaccuracies in the GNN database and inherent problems with MaxEnt probably led to errors with MaxEnt predictions of owl distributions. The reviewer suggested that there is little science to support the assumptions that GNN data for vegetative variables believed to be important to northern spotted owls were equally accurate across modeling regions, and there is little certainty that relevant processes were sufficiently captured so as to reliably predict owl population performance.

Our Response: As noted earlier, no vegetation database will be free of error; the important question is whether the database used is accurate enough to support the intended analysis objectives. We acknowledge that there may be some errors in the GNN database, yet the MaxEnt models we developed performed very well at predicting habitat suitability for northern spotted owls (one would not expect reliable predictive models if the underlying databases were highly inaccurate—one would expect poorly performing models). Our evaluation of the MaxEnt models developed indicate that the models for all modeling regions were well calibrated and showed quite similar patterns in terms of strength of selection (Figure C–5, USFWS 2011). Cross-validation results showed that all models were robust (i.e., equally accurate when applied to different

subsets of the spotted owl sample; USFWS 2011, Table C–19), and comparison of model results with independent test data showed the models had good ability to predict known northern spotted owl locations (USFWS 2011, Table C–20). Overall, these evaluations suggest our models of relative habitat suitability were robust and have good generality (are good at predicting northern spotted owl habitat in areas other than areas that provided the data for development of the model). As detailed in our response to *0* based on our data needs, accuracy assessments, and independent verification, amongst other information, we believe the GNN database represents the best available scientific data for our purposes.

We are uncertain about what ''inherent problems with MaxEnt'' the reviewer may be referring to; MaxEnt has been thoroughly evaluated in the scientific literature and found to perform very well for predicting species distributions and habitat suitability. Peer-reviewed papers by Elith *et al.* (2006), Wisz *et al.* (2008), Graham *et al.* (2008), Phillips *et al.* (2009), and Willems and Hill (2009) all compared MaxEnt to other modeling tools on identical data sets (sometimes hundreds of species), sample sizes, and geographic areas. MaxEnt always performed very well and was consistently a top-performing model. Based on the accurate performance of the model and the thorough, independent scientific evaluations of MaxEnt on a number of taxa, geographic regions, and sample sizes, we believe we have utilized the best available scientific information to model habitat suitability for the northern spotted owl. We note that 13 out of the 15 peer reviewers agreed that the use of MaxEnt was appropriate for our purposes.

Comment (21): One reviewer stated that although the Service claimed in the proposed rule that the modeling process defined areas that contain the physical and biological features essential for conservation of the species, that in reality MaxEnt provides no scientific support for the PCEs described in the proposed rule, and the proposed rule cites no other scientific basis for them. The reviewer indicates that MaxEnt simply ranks pixels in an area based on the ''best'' habitat definition supplied to it, and that the habitat definitions chosen by MaxEnt do not represent what the spotted owl needs and do not delineate the physical or biological features essential for the conservation of the species.

Our Response: The comment mischaracterizes the relationship between our habitat modeling and the identification of PCEs for the northern spotted owl. We did not use the habitat modeling to define the PCEs for the species. As stated in the proposed rule (March 8, 2012; 77 FR 14062, p. 14082), and reiterated in this rule, the physical or biological features essential to the conservation of the species (and associated primary constituent elements (PCEs)) of critical habitat for the northern spotted owl, are identified based on ''* * * studies of the habitat, ecology, and life history of the species as described in the final listing rule published in the **Federal Register** on June 26, 1990 (55 FR 26114), the Revised Recovery Plan for the Northern Spotted Owl released on June 30, 2011, the Background section of this proposal, and the following information.'' The following section of the proposed rule, titled Physical or Biological Features, provided an expansive discussion of the scientific basis for the identification of the essential physical or biological features of critical habitat for the northern spotted owl, accompanied by numerous supporting citations from the scientific literature, which informed our description of the PCEs. The modeling was not used to describe the PCEs of critical habitat; rather, it was used to identify the areas most likely to contain the PCEs and the areas most likely to have been occupied by northern spotted owls based on habitat suitability at the time of listing, as well as identify the specific areas essential to the conservation of the species. This is an important distinction. The habitat models were constructed from a rigorous assessment of current knowledge of the physical and biological features that influence northern spotted owl habitat suitability, and are supported by a solid scientific basis. We recognize that there may have been some poorly worded statements in the proposed rule that led to some confusion regarding the intersection of the PCEs and the modeling framework. We have clarified the language in this final rule to make it clear that we did not use models to define the PCEs for the northern spotted owl, but that we used the PCEs to develop maps of relative habitat suitability across the range of the northern spotted owl as one step in the identification of critical habitat for the species.

Comment (22): One reviewer recommended that the Service: (a) evaluate the rate at which MaxEnt may misclassify locations that do not contain spotted owls; and (b) provide evidence that MaxEnt accurately incorporates the factors that reflect the best environmental conditions for optimal population performance among northern spotted owls.

Our Response: Our models were developed to identify areas likely occupied at the time of listing based on relative habitat suitability (RHS), not to identify areas that do not contain owls. Furthermore, the presence of owls on territories can vary across space and time. There any many possible reasons that an organism (northern spotted owl in this case) may not occupy apparently suitable habitat for a period of time (e.g., death, competition, population is not at equilibrium with its environment). We did not use the RHS values to predict the number of years a site would be occupied or the reproductive rates at territories. The RHS layers we developed have been subjected to rigorous cross-validation and testing with independent data, as explained in Appendix C of the Revised Recovery Plan (USFWS 2011). Our assessment of the estimated on-the-ground conditions at high, intermediate, and low RHS values corresponds very closely to the published literature on northern spotted owl habitat use and selection, thus addressing (b). See also our responses to *Comments (19), (20),* and *(21),* among others.

Comment (23): One reviewer stated that comparisons with other evaluations of northern spotted owl habitat demonstrate the flaws in the modeling. In comparison with NWFP land use allocations, the modeling process includes 2.7 million ac (1.1 million ha) of lands that, up until now, had not been viewed as being needed for the recovery of the spotted owl. Overlaying the proposed critical habitat designation with USDA Pacific Northwest Research Station's 2011 data on old growth forests shows that only 36 percent of proposed critical habitat comprises late-successional old growth forest. Overlaying the proposed designation with USDA Pacific Northwest Research Station's 2011 report allocating spotted owl habitat into unsuitable, marginal, suitable and highly suitable shows that 50 percent of proposed critical habitat is either unsuitable or marginal habitat, and only 24 percent of the acres are classified as highly suitable.

Our Response: The designation of critical habitat is guided by the statutory language of the Act, and is highly species-specific in terms of its direction to identify specific areas that provide the physical or biological features essential to the conservation of the listed species in question—in this case, the northern spotted owl. Late-successional reserves under the NWFP, on the other hand, were established for

the conservation of multiple species of varying taxa (birds, mammals, amphibians, fishes, etc.) and, in some areas, encompass forest types not used by northern spotted owls. For these reasons, the comparison of critical habitat with NWFP land use allocations is inappropriate, because they are intended to serve different purposes. The 2.7 million ac (1.1 million ha) of lands the reviewer refers to are presumably the congressionally reserved natural areas (wilderness areas and national parks) that are now excluded in this designation. These lands have consistently been viewed as essential to the recovery of the northern spotted owl since the species was listed. However, they were not included in previous designations due to our interpretation of the definition of critical habitat under section 3(5)(A) of the Act at that time and because their current classification and management was deemed adequate to meet northern spotted owl conservation goals. A primary purpose of these congressionally reserved natural areas is to conserve natural systems, including threatened and endangered species and their habitats, including the northern spotted owl. These areas are managed consistent with the conservation of the northern spotted owl, and we could find no benefit of inclusion that would outweigh the potential administrative costs associated with the designation of critical habitat on these lands.

Based on our modeling process, we found that northern spotted owl population performance under a habitat network represented by the 1994 NWFP was relatively poor compared with several other reserve designs (Dunk *et al.* 2012b). This result is not surprising considering the influence of barred owls and continued habitat loss to wildfire. Similarly, the results of this commenter's comparison of proposed critical habitat to maps of old growth forest and the nesting habitat model from the 2011 NWFP monitoring report would be anticipated, because the NWFP models represent only a portion of the habitat elements and spatial extent used by northern spotted owls. In particular, the classification of habitat into unsuitable, marginal, suitable, and highly suitable pertains only to forest structure used for nesting at the pixel scale, whereas our models are based on landscape-level habitat selection and incorporate the broader array of habitats used by northern spotted owls (including non-old growth). We believe the commenter is attempting to make ''apples and oranges'' type comparisons of habitat, and for the reasons described above, we disagree with the statement that such comparison demonstrate flaws in our modeling.

Comment (24): One reviewer stated that the Zonation model was not designed to develop a conservation network and that this model does not make a judgment as to what is essential for the conservation of the species. As characterized by the reviewer, Zonation does not use the presence or absence of PCEs as input so it does not show where the PCEs are essential. According to the reviewer, what it does is take the relative habitat suitability index of the MaxEnt model (which itself does not depict the presence or absence of PCEs), further smooth them by assigning new values at the home range size of 3,424 ac, (1,386 ha) and determines how little land is required to capture some percent of habitat values based on the parameters provided by the Service. It does this by removing the areas with the lowest habitat values first until the specified percentage of the habitat values are left. The reviewer contends that the Service used Zonation outputs that captured 70 percent of the habitat values as the basis for the proposed revision of critical habitat, and that this in no way supports the premise that these areas are essential for the conservation of the species. The reviewer claims that Zonation only shows a computer's calculation of the minimum amount of land needed to encompass 70 percent of the habitat value, which is a purely artificial data point created from smoothed indices of a relative habitat suitability index based on biased spotted owl locations overlaid on a hypothetical landscape using conglomerated data. The reviewer states there is no way to determine if the areas captured by these solutions actually contain the PCEs, and the Service has no idea how accurate the model is in predicting use by spotted owls.

Our Response: We disagree with the reviewer's statement in that it mischaracterizes the intended purpose of Zonation, the way the model works, and how the Service used it. The Zonation model was designed specifically for the purpose of developing conservation networks (Moilanen and Kojala 2008). However, we did not simply employ the Zonation model to provide a critical habitat network. As described in our response to *Comment (21*), and as detailed at length in our Modeling Supplement (Dunk *et al.* 2012b), we used the PCEs for the northern spotted owl to develop maps of relative habitat suitability for the species across its range; this step then informed the development of the spotted owl habitat conservation planning model (Zonation), thus the presence of PCEs is the foundation of the entire habitat modeling framework, and is fundamental to our identification of critical habitat for the northern spotted owl. We used Zonation to provide a series of alternative networks that were then compared in terms of relative simulated spotted owl population performance (using HexSim). After comparing a wide range of Zonation-derived scenarios, the top-performing alternatives for each modeling region were assembled into composite maps for further evaluation in HexSim. Development of composite maps also involved modification of reserve designs based on expert opinion and policy. In many modeling regions, the proposed critical habitat deviates substantially from the strictly Zonation-derived reserve designs, because use of the modeling was only one step in the process of identifying critical habitat. Finally, the Service verified that the resulting proposed critical habitat met the statutory criteria of critical habitat by evaluating the proportion of proposed critical habitat that was occupied by known northern spotted owl home ranges at the time of listing and that provides the essential physical or biological features, and by evaluating any areas that may have been unoccupied at the time of listing to determine whether they are essential to the conservation of the species. In addition, to address any uncertainty regarding occupancy, we evaluated all of the critical habitat under the higher standard of section 3(5)(a)(ii) of the Act. Please see Criteria Used to Identify Critical Habitat for further information.

Comment (25): One reviewer stated that the process used by the Service to define what constitutes nesting, roosting, and foraging habitats in the proposed rule produced results in staggering differences compared to historical definitions. According to this reviewer, not only are they totally different from what has been viewed as valid definitions for almost 20 years, but they are also totally unrecognizable on the ground. The reviewer claims the proposed rule utilizes habitat definitions derived from analysis of the hypothetical GNN–LT vegetation layer coupled with abiotic factors, which only make sense in computer modeling. The reviewer states that MaxEnt does not use these definitions to identify NRF (nesting/roosting/foraging) habitat but rather assigns an RHS value based on how many of the factors are present. Finally, the reviewer says that the Service claims to be using these factors

to determine if stands contain the PCEs when, in fact, they do not.

Our Response: We are unsure of the basis for this comment, since the definitions of nesting, roosting (NR) and foraging (F) habitats used in this critical habitat rule are very similar to definitions used in past assessments, including previous designations of critical habitat for the northern spotted owl, and the definitions we use are based primarily on the information found in the published scientific literature. In fact, all NR and F models tested were derived from literature reviews and expert opinion, including input from timber industry scientists and managers. The relative habitat suitability models incorporate these NR and F definitions (submodels), as well as broader environmental features such as elevation and slope position, that are also well-described in the northern spotted owl literature. The remainder of the comment mischaracterizes our habitat suitability modeling; a thorough explanation of that modeling is found in Appendix C of the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011). In addition, please see our response to *Comment (19)* for details on how the PCEs were defined and incorporated into the process of mapping RHS.

Comment (26): One reviewer stated that the Service modified input variables given to HexSim to produce ''composites,'' and the Service cannot show that these contain the PCEs and that they are essential, and there is no statistical difference between the different composites. By only displaying mean values, the reviewer claims the Service creates a false appearance that the difference between these alternatives is real. The Service does not show that the differences result in any real difference in achieving recovery objectives, they merely state it as a matter of fact. This is a misuse of modeling data, the reviewer states, and not best available science.

Our Response: This comment misunderstands the process used to develop composite maps, and the subsequent comparison of HexSim results. Composite maps are maps where different reserve designs were selected for each modeling region based on their ability to achieve recovery goals. These region-specific designs were combined across the range of the owl to create a ''composite map.'' We evaluated composite maps in an iterative manner to identify the design that best met recovery goals and our guiding principles. Composites were not created by modifying HexSim input variables; rather, they represent a range of reserve design alternatives that were subsequently tested in HexSim. Appendix C and Dunk *et al.* (2012b) provide ample evidence that all of the composites contain the physical and biological features used by the owl; comparison of HexSim results is the process by which the Service evaluates what amount and distribution of these features is essential to the conservation of the northern spotted owl. As stated in our proposed rule, this final rule, and in Dunk *et al.* 2012b, we assessed various composites by comparing the relative (emphasis added) performance of various habitat scenarios. That is, we used metrics such as relative differences in extinction risk and population size (which include upper and lower confidence intervals) to evaluate the ability of different composites to achieve recovery objectives for the northern spotted owl. In fact, we expressly stated ''simulations from these models are not meant to be estimates of what will occur in the future, but rather provide information on trends predicted to occur under different network designs'' (March 8, 2012; 77 FR 14062, p. 14097). There were statistically significant differences in population performance, both at the modeling region and range-wide scales among our composites (see Appendix C, USFWS 2011 and the Modeling Supplement (Dunk *et al.* 2012b) for additional details). We therefore disagree with the commenter's claims about misuse of modeling data and best available science.

Comment (27): One reviewer stated that the boundaries of the proposed revision of critical habitat are impossible to identify on the ground. They can only be defined by use of global positioning satellite receivers that have had the boundaries created by the Zonation computer model inputted to them.

Our Response: Critical habitat is defined by the features as discussed in this final critical habitat designation and shown on accompanying maps. Specific coordinates and descriptions that define the boundaries of critical habitat are available online at *http://www.fws.gov/oregonfwo,* at *http://www.regulations.gov* at Docket No. [FWS–R1–ES–2011–0112], and from the Oregon Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**); maps are available online at *http://criticalhabitat.fws.gov/crithab/.*

Comment (28): One reviewer states that the Service did not use pixel by pixel data, but conglomerated the pixel data into indices that represent the 500-ac (200-ha) circle around each pixel, which increased the error associated with the predictions. The reviewer claims this wipes out all the actual stands that might actually be used by spotted owls and instead assigns each pixel a conglomerate value for each habitat variable based on averages. Therefore, the reviewer asserts there are many areas that do not contain the PCEs.

Our Response: This comment mischaracterizes the method used to evaluate habitat quality, and the basic definition of habitat for northern spotted owls. As described in Appendix C of the Revised Recovery Plan (USFWS 2011), habitat suitability consists of several factors including, but not limited to, the actual forest ''stands'' used by owls. Our relative habitat suitability models are based on the amount, edge, and core of actual stands classified as nesting/roosting habitat and amount of foraging habitat; i.e., the PCEs identified in this rule. We therefore do not ''wipe out'' the actual stands as suggested by the reviewer, but rather measure their relative importance given additional landscape features such as elevation and slope position. This allowed us to better identify the landscape features where owls could establish a viable territory. Simply mapping out ''the actual stands that might be used'' would have provided a highly fragmented habitat network consisting of many ''stands'' not likely to be used by spotted owls. The comment also ignores the fact that we extensively tested the RHS model and found it accurately predicts spotted owl habitat, and we evaluated the proposed critical habitat network and found that the areas proposed were predominantly occupied by known spotted owl sites at the time of listing. See also our responses to *Comment (19)* through *Comment (24).*

Comment (29): One reviewer stated that Phase 1 results suggested that the Redwood Coast modeling region was among the most stable, but questioned how this could be when there are very few remaining northern spotted owls in Redwood National Park, where barred owls are now the predominate species. The reviewer states this was also not reflected in the Phase 2 modeling results (Table 6) (Dunk *et al.* 2012a).

Our Response: We obtained recent (2006) verified northern spotted owl location data from many sources in the Redwood Coast modeling region. These data strongly suggest that the high densities of barred owls observed within Redwood National Park are not occurring in the remainder of the modeling region, where large numbers of northern spotted owl territories persist. We therefore used demographic data from the Green Diamond

monitoring study to parameterize (put variables into) HexSim for the region.

Comment (30): One reviewer suggested that we include an appendix that shows each of the decision points in the development of the proposed critical habitat network in systematic detail, and suggested this would be an adequate remedy and make the entire modeling process open and transparent, and repeatable by persons external to this process.

Our Response: We attempted to make explicit the key assumptions and decision points used in the modeling process, and the guiding principles we followed for application of professional judgment in refining reserve networks were included in the proposed rule. Much of what the reviewer asks for is presented in Appendix C of the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011). In addition, we have tried to make assumptions and decision points more explicit in our final Modeling Supplement (Dunk *et al.* 2012b) that is available to the public at *http://www.regulations.gov.*

Comment (31): One reviewer suggested that a major flaw in the modeling is that the habitat is held constant for 350 years and any area with an RHS value less than 35 is assumed to be non-habitat. The reviewer states that by holding the habitat constant and not allowing it to grow, the Service greatly overestimates the amount of land needed to reach relative population levels. The reviewer claims this also results in a double standard for areas currently classified by MaxEnt as having low RHS values—in the modeling process they are excluded and not allowed to grow into habitat, yet they are included as critical habitat because the Service claims they will be necessary for population growth.

Our Response: The reviewer misunderstands the method we used to simulate habitat change through time. Habitat was not held constant during the HexSim simulations; we measured the rates of change in habitat quality (RHS) between the 1996 and 2006 GNN layers and projected those rates into the future. This allowed for losses in habitat quality caused by timber harvest, wildfires, and other causes as well as gains due to forest growth to occur through time in a plausible fashion. Because the remainder of this comment is based on this faulty premise, the other points in this comment are, in turn, unfounded.

Comment (32): One reviewer noted that throughout the modeling process, means of the response variables (e.g., Table 8 of Dunk *et al.* 2012a) should be accompanied by either standard errors or 95 percent confidence intervals. Otherwise, the reviewer states, it is difficult to determine how precise these estimates were, especially when comparing different scenarios.

Our Response: We agree, and this was an oversight that we have corrected in the final version of our Modeling Supplement (Dunk *et al.* 2012b).

Comment (33): One reviewer thought more could have been done to evaluate uncertainty in the original habitat suitability models by running replicate samples in MaxEnt and then capturing the range of variation in resulting habitat designations.

Our Response: Table C–19 in Appendix C of the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) presents results from the cross-validation results, in terms of performance differences between models based on replicate samples. Those results showed that there was very little difference between the performance of the models when replicate samples were evaluated, giving us confidence in the generality of our model (that is, the model worked reliably well across a range of situations tested).

Comment (34): One reviewer requested additional sensitivity analysis to quantify the influence of different parameter settings within HexSim on modeled population performance, which would have been particularly useful for evaluating the implications of scientific uncertainty.

Our Response: We agree and in the final Modeling Supplement (Dunk *et al.* 2012b) we have incorporated the results of sensitivity analyses conducted on nine HexSim parameters.

Comment (35): One reviewer noted that the original supplement on habitat modeling that accompanied our proposed rule (Dunk *et al.* 2012a) did not report measures of variance in the population estimates or pseudo-extinction thresholds used to compare habitat network scenarios. The reviewer noted that reporting standard errors or ranges of those population estimates would help in the comparison of the efficacy of different network designs.

Our Response: Our failure to report measures of variation in population estimates was an oversight that we have corrected in the Modeling Supplement (Dunk *et al.* 2012b). The estimated extinction risk thresholds that we reported were the total number of simulations in which that threshold was exceeded (i.e., the population fell below the extinction threshold). It would not be appropriate to provide measures of variation around these. The measure itself is interpreted as the ''probability of exceeding pseudo-extinction threshold X.''

Comment (36): One reviewer noted that model results showed that the barred owl encounter rate can have a disproportionately large influence on persistence outcomes of the HexSim model. The reviewer states that the Service evaluated four barred owl scenarios (Dunk *et al.* 2012a), but none of these considered the more critical survival parameter and the major reductions in adult survival that barred owls generate in the model. Thus, the reviewer states that one is unable to assess the relative contributions of barred owl encounter rates versus barred owl survival reductions to persistence of simulated northern spotted owl populations.

Our Response: In the northern spotted owl HexSim model we used, barred owls only affected northern spotted owl survival, not occupancy or reproduction. Thus, the impact of barred owls in HexSim results is only from their reduction of northern spotted owl survival. Based on advice we obtained from species experts, we limited barred owl impacts on northern spotted owls to survival alone. We did not simulate barred owl impacts on reproduction, territory establishment, site fidelity, or movement behavior. We also did not simulate barred owl predation on northern spotted owl nestlings. This recommendation (to simulate barred owl impacts only on northern spotted owl survival) was a reflection of limitations on rangewide data availability regarding these factors.

Comment (37): One reviewer suggested that we allow the barred owl effect in the HexSim model to vary with resource acquisition class. For example, the barred owl effect on survival might be more severe when an owl is in the ''low'' resource class but incrementally reduced in the medium and high resource classes (i.e., as resources become less limiting so do the negative effects of competition with barred owls).

Our Response: Resource acquisition classes are a component of the HexSim model. In the model, resources available to an owl are a function of the mean RHS value of habitat within its home range and fall into three categories: High, medium, or low (USFWS 2011, p. C–60). This is a good suggestion, and could potentially help refine the HexSim model for the northern spotted owl. It would not, however, improve the model's ability to identify those specific areas that contain the physical or biological features essential to the conservation of the northern spotted owl, or that are essential to the conservation of the species (section

3(5)(a) of the Act). The relative performance of various composite potential critical habitat networks would be unlikely to change if we were to change the analysis as the reviewer suggests, because the proposed change would affect all potential critical habitat networks in the same way. The relative performance of the habitat networks under consideration, which is what we were able to assess (as opposed to absolute outcomes), would therefore remain the same, and our ultimate determination of the critical habitat network that provides what is essential to the conservation of the northern spotted owl in the most efficient design would be unchanged.

Comment (38): One reviewer suggested that modeling of habitat networks should incorporate more realistic encounter rates between northern spotted owls and barred owls, so that estimates of sustainability of northern spotted owl populations are not overly optimistic.

Our Response: As we have noted in both the proposed rule and this rule, the designation of critical habitat is only one of many conservation actions that may contribute to the recovery of the northern spotted owl. The designation of critical habitat is intended to help address habitat-based threats to a listed species; it is not expected to independently lead to recovery absent other actions to ameliorate additional, non-habitat based threats. We are also bound, however, by the statutory definition of critical habitat, which requires that we identify those areas that provide the physical or biological features essential to the conservation of the species, or are otherwise essential (if not occupied at the time of listing). The task of identifying where on the landscape these essential areas lay was complicated by the barred owl, a non-habitat based threat. In some cases, the negative influence of the barred owl on the simulated performance of our modeled northern spotted owl populations completely masked the potential contribution of varying areas of relative habitat suitability, thus rendering it impossible to determine which specific areas provide the essential physical or biological features. Our HexSim modeling suggested that if barred owl encounter rates within each modeling region were to be maintained at their currently estimated rates (from Forsman *et al.* 2011), there was little variation in northern spotted owl population performance among any of the potential critical habitat networks (even doubling the size of the habitat network produced no discernible difference). The only avenue that allowed us to discriminate between potential networks and isolate and evaluate the contribution of specific areas of habitat that are essential to the conservation of the northern spotted owl, as directed by the statute, was to adjust the encounter rates with barred owls to some reasonable level, as might potentially be achieved through management actions. This harkens back to our statement earlier that we do not assume critical habitat will provide for the recovery of the species in a vacuum; rather, we must assume that other recovery actions will occur in coincidence with the protections provided by critical habitat. We assumed changes in barred owl encounter probabilities in our comparisons of potential critical habitat networks that, in our judgment, represented changes that could realistically be achieved with management aimed at reducing encounter rates (and without prescribing the nature of that management). In most cases, only relatively modest changes to the currently estimated encounter probabilities between barred owls and northern spotted owls were required to allow us to discern the underlying differences between varying habitat network designs, and to enable the identification of the specific areas essential to the conservation of the species. In fact, for Phase 2 and 3 modeling (MaxEnt and HexSim; see Dunk *et al.* 2012b for details), we decreased barred owl encounter probabilities in only 3 of 11 modeling regions, and increased encounter probabilities in 8 of 11 modeling regions. The mean absolute value of change (from currently estimated encounter probabilities to what we assumed in Phases 2 and 3) among modeling regions was 0.081 (range = 0.005 (in the KLE) to 0.335 (in the OCR)). Our population performance results do not suggest that the habitat scenarios considered were overly optimistic in regard to sustainability of northern spotted owl populations (Dunk *et al.* 2012b).

Comment (39): One reviewer suggested incorporating the relative probability of controlling barred owls as part of the designation of various critical habitat units. The reviewer noted that to be able to assess habitat factors in the modeling process, the barred owl effect had to be set below known values in selected areas, suggesting that these designated critical habitat units will not contribute to northern spotted owl conservation in the absence of barred owl control. The reviewer further stated that the apparent sensitivity of the HexSim model to the barred owl covariate indicates that barred owl management will be the overriding factor in the success of critical habitat being able to achieve the northern spotted owl recovery goals. The reviewer suggested that if the Service wants to capture uncertainty in this modeling exercise, the probability of controlling barred owl numbers should be factored into the modeling process based on logistical, ownership, and social factors.

Our Response: We agree with the reviewer's suggestions in theory. However, we are unaware of currently available scientific information that would enable us to reliably estimate the influence of ''logistical, ownership, and social factors'' on the probability of effective barred owl control across the range of the northern spotted owl (over 50 million ac (20 million ha)). Lacking any such specific data, such exercise would be arbitrary and speculative, and would likely introduce greater uncertainty into the modeling. We appreciate that the reviewer recognizes the sensitivity of the model to barred owl encounter rates, and the reason why we had to make slight adjustments to those rates in some areas to identify critical habitat for the northern spotted owl (see our response to *Comment (38),* above).

Comment (40): One reviewer indicated that basing the demographic trends on the last meta-analysis (Forsman *et al.* 2011) is overly optimistic since these results are already badly outdated. The reviewer states that the last meta-analysis was conducted after the 2008 field season, with survival rates estimated through 2007 and realized rate of population change through 2006. The reviewer states that, according to personal communications with researchers in other demographic study areas, many of the study areas shown as stable in the 2008 meta-analysis are now in precipitous decline due to rapid increases in barred owl populations. The reviewers suggests that, although it would only be qualitative, the Service could contact the leads from the various northern spotted owl demographic study areas to see if there have been substantial changes in barred owl versus northern spotted owl numbers.

Our Response: This is a good point, and we heard similar comments from several field researchers and principal investigators of the northern spotted owl demographic studies. In Step 3 of the modeling process, we obtained the most recent annual reports from the demographic study areas and evaluated

the more recent estimates of barred owl densities, and included a scenario representing high barred owl densities such as those described in this comment. Because we used more recent estimates of barred owl encounter rates, spotted owl population trends simulated in HexSim showed a more rapid decline than that estimated in the recent meta-analysis; this was especially evident in the Tyee demographic study area. We therefore believe that our modeling process incorporated the idea expressed in this comment.

Comment (41): One reviewer indicated that bounding experiments with HexSim are needed to suggest the sort of spatial, temporal, and population controls that may be needed for the barred owls to create a high likelihood of success for critical habitat. The reviewer suggests the Service has thus far determined the barred owl encounter rates that were needed to achieve reasonably stable northern spotted owl population dynamics.

Our Response: This is a good suggestion, but not necessary to identify lands meeting the definition of critical habitat. Because we evaluated northern spotted owl population performance across a gradient of barred owl encounter probabilities ranging from 0.0 to 0.7, our modeling already revealed that northern spotted owls are likely to do very poorly at high barred owl encounter probabilities. This provided a general understanding of the influence of various barred owl encounter rates and demonstrated the range of values (bounds) where population performance that met recovery criteria was possible. This is why we set 0.375 as a ceiling to barred owl encounter probabilities. The reviewer's suggestion is more relevant to the specifics of potential barred owl control efforts, such as have been recommended by the Revised Recovery Plan on an experimental basis (USFWS 2011). The Service is currently considering such efforts and has published an environmental impact statement on experimental barred owl removal options. That is a separate recovery effort, however, is not connected to this rulemaking.

Comment (42): Several reviewers expressed concern that the way that barred owl encounters were represented in the model as homogeneous probabilistic reductions in northern spotted owl survival may fail to capture important spatial patterns of interaction between the species within subregions, and it may overestimate (one reviewer) or underestimate (second reviewer) the negative impacts of barred owls on northern spotted owl population persistence. The reviewers suggested the uncertainty surrounding the specific impacts of barred owls, and the analysis in Appendix C of the Revised Recovery Plan for the Northern Spotted Owl further justify the need for an intensive barred owl removal experiment to understand the overall impact that barred owls are having on northern spotted owls.

Our Response: This point is well taken by the Service. As the reviewer mentioned, ''empirical information required for a realistic representation of barred owl interaction effects across the range of the northern spotted owl is not available at this time.'' The Service did evaluate several different barred owl encounter probabilities, which largely differed among the 11 modeling regions, but were identical within modeling regions. The modeling framework we used is capable of including a spatially explicit barred owl effect, if such specific data should become available. Given the uncertainties about variation in barred owl impacts within modeling regions, it is possible that our modeling overestimated or underestimated negative barred owl impacts. However, because we used HexSim to compare relative population performance among alternative potential critical habitat networks, and used the best available estimates of barred owl effects, we believe the representation of barred owl impacts we used allowed us to accurately evaluate which networks, on a comparative basis, best met the objectives in our guiding principles for identifying lands meeting the definition of critical habitat for the northern spotted owl.

Comment (43): One reviewer believed that the HexSim model was not an appropriate choice for this modeling process because the reviewer indicated it was overly complex, too individually based, and included variables where there was no, little, or very incomplete data, such as territory searching behavior, and floater dynamics, etc. In addition, the reviewer expressed skepticism that the modeling approach used would be repeatable, because of its complexity.

Our Response: We disagree. We have articulated our rationale for using the HexSim model in Appendix C to the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011, pp. C–53–C–56) and again in our Modeling Supplement (Dunk *et al.* 2012b). We acknowledge that there are many possible approaches to identifying and evaluating alternative potential critical habitat networks. However, we contend that our approach represents the best available science and is appropriate for identifying areas meeting the definition of critical habitat because it enabled us to evaluate numerous possible networks of habitat and compare simulated population responses of northern spotted owls to environmental conditions in a spatially-explicit manner that enabled us to determine those areas that meet the definition of critical habitat for the species. Our approach is detailed in the section Criteria Used to Identify Critical Habitat, but in brief, the use of HexSim enabled us to evaluate which of the habitat scenarios under consideration had the greatest potential to meet the recovery objectives for the northern spotted owl, based on relative population performance.

To identify the areas that meet the definition of critical habitat for the northern spotted owl, we elected to use a spatially explicit, individual-based modeling approach. We did so because we required an approach that enabled comparison of a wide range of spatially explicit conditions such as variation in habitat conservation networks. Individual-based models allow for the representation of ecological systems in a manner consistent with the way ecologists view such systems as operating. That is, emergent properties such as population increases or declines are the result of a series of effects and interactions operating at the scale of individuals. Individuals select habitat based on what is available to them, disperse as a function of their individual circumstance (age), compete for resources, etc.

Grimm and Railsback (2005) noted that individual-based models need to be simple enough to be practical, but have enough resolution to capture essential structures and processes. We are fortunate to have a tremendous quantity and quality of data available for the northern spotted owl; the species is therefore ideally suited for a spatially-explicit, individual-based model, such as HexSim. While not developed specifically for the northern spotted owl, HexSim (Schumaker 2011) was designed to simulate a population's response to changing on-the-ground conditions by considering how those conditions influence an organism's survival, reproduction, and ability to move around a landscape. We developed a HexSim spotted owl scenario based on the most up-to date demographic data available on spotted owls (Forsman *et al.* 2011), published information on spotted owl dispersal and home range sizes, as well as a variety of other parameters. Evaluation and calibration of the HexSim output included comparison with owl numbers in demographic study areas and

dispersal histograms. Based on our assessment of the model, we are confident it performs as intended, in terms of allowing us to reliably assess the relative performance of alternative habitat conservation networks. We further note that the majority of peer reviewers supported the modeling framework we applied in the identification of critical habitat for the northern spotted owl.

Comments on Active Forest Management

Comment (44): Five peer reviewers and numerous public commenters indicated that active forest management should be conducted in areas that are not currently high value for northern spotted owls and in an adaptive management framework given the uncertainties regarding how such management practices will impact northern spotted owls and their prey.

Our Response: The Service expects to support and design, in concert with the BLM, USFS, and researchers, scientific studies on the effects of ecological forestry projects in northern spotted owl critical habitat, to gain a better understanding of the short-term and long-term impacts of these silvicultural treatments on northern spotted owls, their prey and forest vegetative structure. We are currently designing and funding just such a study through Oregon State University for the pilot project in the Middle Applegate Watershed. We expect these types of research studies to inform the design of future ecological forestry projects within the range of the northern spotted owl.

A key difference between using active adaptive forest management to evaluate risks associated with ecological forestry and the Service's ongoing efforts to address risks associated with expanding barred owl populations is that, for barred owls, a single experiment has the potential to address many of the most important uncertainties pertinent to future management, allowing the Service to define a schedule for progress. Addressing uncertainties about ecological forestry will likely require multiple research efforts, each tailored to specifics of different geographic areas and different ecological interactions. Collaboration among programs, similar to the collaboration supporting long-term demographic studies of northern spotted owls, will likely be needed to conduct adaptive management studies of habitat treatments. Integrative initiatives, such as the USFS's Collaborative Forest Landscape Restoration Program, may also play an important role. Adaptive management of ecological forestry techniques will take time, and will require continuation of the ongoing dialogue between researchers and forest management practitioners regarding how to simultaneously meet the goals of forest restoration and northern spotted owl conservation. Coordination among research projects also will be essential to generating reliable information about diverse interactions as efficiently as possible.

Comment (45): One reviewer and a public comment suggested that the emphasis of management within northern spotted owl critical habitat should be on ecological restoration rather than ecological forestry.

Our Response: In general, in northern spotted owl critical habitat, we would like to see land managers consider activities to restore and maintain northern spotted owl habitat and the natural ecological processes (e.g., fire regime, natural vegetational succession patterns, etc.) of the owl's forest ecosystems. However, we also recognize that ecological restoration, in and of itself, is often not the management goal of all lands included in critical habitat. This critical habitat rule does not dictate what land managers do on Federal State, or private lands. However, in areas where land managers are considering competing land management goals (e.g., northern spotted owl habitat conservation vs. commercial timber harvest), we encourage them to consider an ecological forestry approach to better meet the needs of the northern spotted owl, the goals of the land managers, and long-term forest health. As described in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011), the field of ''ecological forestry'' is emerging as a dominant paradigm of forest management; related to this emergence are concepts such as ''natural disturbance emulation'' and ''retention forestry'' (see, e.g., Gustafsson *et al.* 2012, entire; Franklin *et al.* 2007, entire; Kuuluvainen and Grenfell 2012, entire; North and Keeton 2008; Long 2009, entire; Lindenmayer *et al.* 2012; entire). The Service believes that application of these ecological forestry goals and principles, including those generally described in Johnson and Franklin (2009, entire; 2012, entire), may result, in some situations, in fewer adverse impacts to northern spotted owl critical habitat when compared to application of traditional silviculture as currently applied or permitted on private, State, and Federal matrix lands.

Comment (46): Several reviewers commented that studies have demonstrated negative effects of forest thinning on northern spotted owls and their prey, and expressed concern that negative effects of these practices may be further exacerbated by barred owls. These reviewers were uneasy with such types of activities occurring near owl territories, and recommended that if conducted, these actions be done at small scales and be subject to rigorous scientific scrutiny.

Our Response: We are not recommending that commercial thinning or other treatments be conducted near active owl territories or in good quality owl habitat. We also encourage an active adaptive forest management approach to improve the understanding about effects of ecological forestry approaches on northern spotted owl, barred owls, and other species of concern.

Comment (47): Three reviewers recommended that we give full consideration to recent publications of Hessburg *et al.* (2007) and Baker (2012) for guidance on how to restore and manage dry forests in the eastern Cascades.

Our Response: Both this final critical habitat rule and the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) cite Hessburg *et al.* (2007, p. 21), and we continue to recommend land managers consider their findings and recommendations regarding dry forest management within the range of the northern spotted owl. Since publication of the proposed critical habitat rule, we have reviewed Baker (2012, entire) as well as many other recently published studies addressing forest health and the risk of wildfire in the Pacific Northwest. We acknowledge some of the conclusions of Baker (2012, p. 21) and Williams and Baker (2012, p. 9) that portions of the dry forests of the Pacific Northwest experienced high-severity fires as well as mixed and low-severity fires. However, we also acknowledge the conclusions of many other researchers that large areas within the range of the owl that once burned frequently with low-moderate intensity regimes are currently outside of historical conditions (cited below). A variety of management measures (e.g., prescribed fire, mechanical treatment, etc.) can be considered in such areas where the goal is to influence wildfires to reduce adverse impacts of climate change, manage forest carbon levels, reduce fire severity and retain desirable forest conditions (i.e., conserve older trees), or protect high-value wildlife habitats (including northern spotted owls), riparian areas, and biodiversity (Davis *et al.* 2012, entire; Stephens *et al.* 2009, p.310–318; Stephens *et al.* 2012a, p. 12; Stephens *et al.* 2012b, entire; Chmura *et al.* 2012, p. 1134; Syphard *et al.* 2011,

p. 381; Safford *et al.* 2012, pp. 26–27; Roloff *et al.* 2012, pp. 7–9, Roberts *et al.* 2011, p. 617, Messier *et al.* 2012, pp. 67–70; Franklin *et al.* 2008, p. 46; Ager *et al.* 2007, pp. 53–55).

Such management considerations are completely consistent with the intent of the NWFP (Standards and Guidelines, p. C–12—C–13). We continue to recommend that land managers carefully distinguish and target areas that are high priority for ecological restoration (e.g., Franklin *et al.* 2008, p. 46; Schoennagel and Nelson 2011, entire; Ager *et al.* 2012, p. 280), and that they also minimize short-term impacts to northern spotted owls to the greatest possible extent. We suggest using a process such as provided by Spies *et al.* (2012, entire) to help prioritize actions and consider tradeoffs such as northern spotted owl conservation, restoration of ecological conditions, and other land management goals. Given the wide geographic area of this critical habitat designation and the variety of landscape conditions and fire regimes, more precise planning and implementation should be done at the appropriate landscape scales such as the National Forest scale, consistent with the goals of the Northwest Forest Plan.

Comment (48): One reviewer and a public comment recommended that the Johnson and Franklin (2009) ecological forestry framework should not be used because it is based on the wrong reference framework.

Our Response: While we recognize that there is some scientific disagreement about the specific ecological forestry practices recommended by Drs. Johnson and Franklin,we believe the commenters may have misinterpreted our references to this unpublished report. First, Johnson and Franklin (2009) is only referenced three times in the final critical habitat rule: Once as a general reference for ecological forestry, once in relation to how active management is generally not necessary to maintain old growth conditions in moist forests, and again to highlight that alteration of fuel loads in moist forest could have undesirable ecological consequences and thus should be discouraged. Second, we continue to encourage forest land managers to consider the application of ecological forestry principles to their commercial timber harvest (see response to peer review question 4a-c, above), and we believe that application of these principles in many instances may result in better long-term ecological conditions for northern spotted owls and other forest wildlife when compared to the application of traditional silviculture methods. The methods presented by Johnson and Franklin (2009) are one example of how ecological forestry can be applied. We recognize that there are a variety of approaches, and the best management practices for any area are highly dependent on site-specific conditions.

Comment (49): One reviewer recommended a zoning process for determining where active management would be appropriate. Such a zoning process would include identification of areas where management is not needed or should be avoided, areas where future habitat could be enhanced by treatment, and areas where management is needed to meet broader landscape goals. In addition, monitoring and reporting of progress towards desired goals is essential if this strategy is to be successful.

Our Response: The Service supports the concept of land managers identifying areas where active management would be appropriate on the lands under their jurisdiction. However, it is not appropriate for this critical habitat rule to attempt to do this; it should be done by land managers consistent with their planning procedures. As the reviewer also suggested, these details will need to be worked out at regional scales and planning levels (see response to peer review comment 4, above). Several examples of strategies for prioritizing landscapes for management treatment in eastern Washington include Davis *et al.* (2012, entire) and Franklin *et al.* (2008, pg. 46).

Comment (50): One reviewer encouraged the Service to recognize the highly transient nature of grand fir on the eastern Cascades.

Our Response: We have recognized this in the rule. While we did not explicitly identify all forest types in all regions, we have recognized the patchy and transient nature of east Cascades forests.

Comment (51): One reviewer asked that we identify which (specific) ecological processes will be enhanced by management and how management will be coordinated across large landscapes.

Our Response: We agree that additional guidance and coordination among management agencies would be helpful to coordinate landscape-level planning; however, such guidance and coordination is beyond the scope of this rulemaking. To the extent possible we have provided additional detail regarding restoration and management of ecological processes in revisions to the following sections of this rule: *An Ecosystem-based Approach to the Conservation of the Northern Spotted Owl and Managing Its Critical Habitat, Special Management Considerations or Protections,* and *Determination of Adverse Effects and Application of the ''Adverse Modification'' Standard.*

Comment (52): There were a number of general comments about analysis of fire risk and ecological benefits of contemporary fire regimes in dry and mixed-severity forests.

Our Response: The issue of forest health and fire risk in the Pacific Northwest is complex, and there is a wide variety of legitimate scientific viewpoints on forest management in the face of uncertainty. Although some scientists do not believe management intervention is appropriate and advocate a mostly passive (i.e., hands-off) approach to forest ecosystem management, many others believe science-based intervention is necessary to restore and maintain important ecological processes and components of biodiversity, including the northern spotted owl.

We agree with the majority of scientists who suggest that forest ecosystems at global, national, and regional levels are undergoing significant changes due to climate change and past management activities (Collins *et al.* 2012, pp. 8–12; Miller *et al.,* 2012, p. 201; Miller *et al.,* 2009, p. 28; Moritz *et al.* 2012, entire; Westerling *et al.* 2011, p. S459; Marlon *et al.* 2012, p. E541). Impacts from wildfire, changes in precipitation, insect and invasive weed outbreaks, and forest disease appear to be increasing when compared to historic patterns and are putting some components of native biodiversity at risk (Perry *et al.* 2011, p. 712). Although some researchers disagree on the magnitude of these changes and what to do about them (e.g., Hanson *et al.* 2009, p. 5; Baker 2012, p. 21; Williams and Baker 2012, p. 9; Dillon *et al.* pp. 18–20), our review of the recent scientific literature found that most researchers believe that changes in wildfire frequency, severity, and total burned area are occurring or are expected to varying degrees in the Pacific Northwest. Most of these researchers recommend consideration of certain types of active management responses to achieve goals such as increasing forest resilience to climate change, conserving extant biodiversity, and reducing wildfire severity (e.g., Stephens *et al.* 2009, pp. 316–318; Safford *et al.* 2012, pp. 26–27; Messier *et al.* 2012, p. 69; Hessburg *et al.* 2007, entire; Chmura *et al.* 2012, p. 1134; Stephens *et al.* 2012b, pp. 557–558; Fule *et al.* 2012, p. 76; Halofsky *et al.,* pp. 15–16; Reinhardt *et al.* 2008, pp. 2003–2004; Heyerdahl *et*

al. 2008, p. 47; Latta *et al.* 2010; Littell *et al.* 2009, pp. 1018–1019, Littell *et al.* 2010, p. 154; Spies *et al.* 2010, entire). Several of these studies identify the potential for degraded ecological conditions and increased fire risk to affect northern spotted owls (Buchanan 2009, pp. 114–115; Healey *et al.* 2008, pp. 1117–1118; Roloff *et al.* 2012, pp. 8–9; Ager *et al.* 2007, pp. 53–55; Ager *et al.* 2012, pp. 279–282; Franklin *et al.* 2009, p. 46; Kennedy and Wimberly 2009, pp. 564–565). We recommend that these issues related to active management in dry forests be considered by Federal land managers as they follow the direction on pages C–12 and C–13 of the Northwest Forest Plan Standards and Guidelines.

Comment (53): One reviewer recommended that the Service prepare a draft environmental impact statement (DEIS) under NEPA with regard to active management in northern spotted owl critical habitat.

Our Response: This rule revises the critical habitat designation for the northern spotted owl by identifying those specific areas that meet the definition of critical habitat for the species. It does not take any action or adopt any policy, plan, or program related to active forest management. The only effect of critical habitat is that Federal agencies must consult with the Service on their activities that may affect designated northern spotted owl critical habitat, and our discussion of active forest management is not intended in any way to prescribe or mandate the types of activities Federal agencies must submit for consultation. It is provided only for Federal, State, local, and private land managers to consider as they make decisions on the management of forest land under their jurisdictions and through their normal processes.

Comment (54): One reviewer criticized the proposed rule for promoting ecological forestry for economic and political reasons rather than basing recommendations on sound science.

Our Response: We disagree. We have included a discussion of ecological forestry principles because, in many instances, it may represent a reasonable and solid scientific approach to managing forest ecosystems where multiple—and sometimes competing—management goals need to be reconciled or accommodated (see, e.g., Gustafsson *et al.* 2012, entire; Franklin *et al.* 2007, entire; Kuuluvainen and Grenfell 2012, entire; North and Keeton 2008, entire; Long 2009, entire; Lindenmayer *et al.* 2012, entire). Our primary goal in this critical habitat designation is to identify the specific areas that meet the definition of critical habitat for the northern spotted owl. In addition, we identify those types of measures that promote the conservation of critical habitat, identify special management measures that may be needed within critical habitat, and identify activities that may affect or adversely modify critical habitat. Our overall emphasis in this designation is clearly on the maintenance and restoration of northern spotted owl habitat, but we also provide general guidance for consideration by land managers on what types of activities may affect northern spotted owl habitat and how to minimize the adverse impacts of those activities. Reference to the principles of ecological forestry as a suggestion for land managers to consider is a scientifically appropriate way to help achieve this goal, and is consistent with the recommendations of the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011), as well as the Standards and Guidelines of the NWFP (e.g., USDA and USDI 1994, p. A–1, Standards and Guidelines, pp. C–12, C–13).

Comment (55): A number of reviewers submitted line-specific edits and revisions.

Our Response: These revisions have been made to the text, where appropriate.

Comments From Federal Agencies

Comment (56): The USFS and several public commenters supported the inclusion of congressionally reserved areas including Wilderness Areas, National Parks, and similar lands for a variety of reasons, including accurately reflecting the area contributing toward recovery, highlighting the conservation value and role of this minimally managed habitat, and to encourage barred owl and other needed management activities.

Our Response: National parks, wilderness areas, and similar lands provide large areas of high-quality habitat for the northern spotted owl. All congressionally reserved lands (e.g., wilderness areas, national parks) proposed for designation have been excluded in this final designation of critical habitat. We agree that such areas play an important role in the conservation of the northern spotted owl under their current management. However, their current conservation value is so great that we could not find any minimal benefits of including them in that outweighed the relatively minor administrative costs of including them in critical habitat, therefore the benefits of excluding them outweighed the benefits of including them. In addition, exclusion of these lands will have no negative conservation impact on their future management and they will continue to function as intended for spotted owl recovery.

Comment (57): The Bureau of Land Management (BLM) and several public commenters identified specific concerns with the proposed critical habitat maps, including revisions to land ownership or management on both public and private land, and questions regarding the mapping scale and resolution. Several commenters submitted revised or corrected maps for the Service to consider in developing the final rule.

Our Response: We thank the commenters for the information provided. We have replaced the NWFP ownership designations used on the proposed critical habitat map with an updated BLM ownership map to correct many errors. In cases where mapping errors may have been made in our proposed critical habitat, such errors were corrected.

Comment (58): The BLM requested we provide maximum clarity with regard to the Act's section 7 consultation process in an effort to reduce the cost and burden of the consultation process.

Our Response: We have provided background and information to help the Federal action agencies assess whether their projects ''may affect'' proposed northern spotted owl critical habitat, the standard to determine whether consultation is required. If further clarification is needed, the Service is glad to provide action agencies with technical assistance to help determine whether or not their proposed action has the potential to affect critical habitat.

Comment (59): The BLM requested additional clarification about how the proposed critical habitat sought to ''ensure sufficient spatial redundancy in Critical Habitat within each recovery unit,'' and the purpose and expectations for these inclusions.

Our Response: In the development of habitat conservation networks, the intent of spatial redundancy is to increase the likelihood that the network and populations can sustain habitat losses by inclusion of multiple populations unlikely to be affected by a single disturbance event. This is essential to the conservation of the northern spotted owl because disturbance events such as fire can potentially remove large areas of habitat with negative consequences for northern spotted owls. Redundancy provides a type of ''emergency back-up'' system to sustain populations in the wake of such events. While the modeling and

evaluation process used by the Service did not formally analyze redundancy, we incorporated spatial redundancy at two scales: By (1) making critical habitat subunits large enough to support multiple groups of owl sites; and (2) distributing multiple critical habitat subunits within a single geographic region. This was particularly the case in the fire-prone Klamath and Eastern Cascades portions of the range.

Comment (60): The BLM provided additional data and mapping layers as well as an alternative approach for designating critical habitat on public lands.

Our Response: Through a series of meetings and work sessions, the Service has reviewed the materials provided by the BLM, and we evaluated and incorporated many of their suggested changes, where appropriate and consistent with our criteria for identifying critical habitat, in developing the final critical habitat designation. Based on BLM's suggestions, we removed relatively small areas of lower quality habitat that had been included in proposed critical habitat and added in relatively small areas of high-quality habitat that improved connectivity or created larger habitat blocks.

Comments From State Agencies

Comment (61): Washington DFW requested that the rule clarify the extent to which management actions with short-term negative impacts to northern spotted owl habitat is consistent with the recovery needs of the northern spotted owl, particularly in areas of Washington State where northern spotted owl populations are greatly depressed.

Our Response: Each situation should be considered on a case-by-case basis, but, generally, actions that have short-term negative impacts may be consistent with the recovery needs of northern spotted owl when the intent of the action is (1) to improve long-term conditions for the species or (2) to improve the overall condition of the ecosystem. It could be argued either that where populations are greatly depressed there is more need for these actions or, conversely, that there is less flexibility to conduct these actions depending on the specifics of the action and the habitat needs of the owl in that area. These are issues that must be addressed in consultation and through the level one team process; assessing that level of detail is beyond the scope of this rulemaking. We have revised the rule (see section: An Ecosystem-based Approach to the Conservation of the Northern Spotted Owl and Managing Its Critical Habitat) to provide additional suggestions regarding what management actions may benefit northern spotted owls and what actions are unlikely to do so. Additional guidance is available in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011).

Comment (62): The Washington Department of Fish and Wildlife supported a coordinated and strategic management plan for dry forest landscapes and expressed a need for the critical habitat rule to consider coordination to implement effective management, reduce conflict, and explore the possibility of Federal funding for landscape strategies.

Our Response: The landscape assessment approach for the East Cascades provides the best basis for development of strategies to manage dry forest landscapes. Products of the landscape assessment can be used to describe the rationale for management actions. The Service is available to work with land managers to assist in the development and implementation of landscape assessments, but this rule does not mandate any specific management within the critical habitat network, which would be beyond the scope of this rulemaking.

Comment (63): Several State and public commenters disagreed with the need to include private lands (and in some cases State lands) in the final rule for a variety of reasons. The commenters did not provide specific information on any particular lands, but provided general reasons that they thought the broad categories of private and State lands should be excluded from the final designation, including concerns of economic issues, uncertainty, private land stewardship, added regulatory burdens (including a disproportionate burden on small landowners), reduction in land value, State land overlays, consistency with existing laws and policy, potential disincentives for conservation or negative impacts to habitat, the need to maintain partnerships with landowners, the need to develop incentives for conservation partnerships, the need to compensate for lack of land use, the need to focus protections on public lands, the lack of notification of private landowners by the Service about the proposed rule, concern that designation penalizes landowners who have retained suitable habitat, and a lack of need for or benefits from additional protections. One commenter suggested that Congress intended the Federal agencies to acquire any private or State lands that are designated as critical habitat.

Our Response: We recognize that the greatest benefit of critical habitat may be realized on actively-managed Federal lands, since the regulatory effect of critical habitat is the requirement that Federal agencies ensure that any actions that they carry out, fund, or authorize do not destroy or adversely modify designated critical habitat. In addition, Federal agencies have a mandate under section 7(a)(1) of the Act to carry out programs for the conservation of endangered species and threatened species. For these reasons, we looked first to Federal lands for the critical habitat essential to the conservation of the northern spotted owl, as described in the section Criteria Used to Identify Critical Habitat and supporting methodology (Dunk *et al.* 2012b).

Section 3(5)(A) of the Act states that critical habitat is defined as (1) the specific areas within the geographical area occupied by the species at the time it was listed that provide the physical or biological features essential to the conservation of the species and which may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species at the time it was listed, upon a determination by the Secretary that such areas are essential for the conservation of the species. Further, section 4(b)(2) of the Act mandates that such determinations shall be made on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impact, of specifying any particular area as critical habitat.

The language of the Act does not restrict the designation of critical habitat to specific land ownership such as Federal lands; thus, lands of all ownerships are considered if they meet the definition of critical habitat. Areas may be excluded from the final designation if the Secretary finds that the benefits of exclusion outweigh the benefits of inclusion under section 4(b)(2) of the Act, or if we determine, based on public comment or other information received following the issuance of the proposed rule, that such areas do not meet the definition of critical habitat (for example, areas that were occupied at the time of listing but do not provide the essential physical or biological features, or areas that may not have been occupied at the time of listing and were proposed for designation, but are not essential to the conservation of the species).

As described in the proposed rule (March 8, 2012; 77 FR 14076, p. 14099), we evaluated critical habitat scenarios that prioritized Federal lands first as well as scenarios without regard to land ownership in determining what is

essential to the northern spotted owl. In all cases, if the scenarios under consideration provided equal contribution to recovery, we chose the scenario that prioritized publicly owned lands. State and private lands were included only if they were essential to the conservation of the species (i.e., were determined to have been occupied at the time of listing and contain the physical or biological features essential to northern spotted owl conservation or may have been unoccupied at the time of listing but are essential to the conservation of the owl). However, based on information received during the public comment period, in several cases we refined the critical habitat boundaries to remove areas of private lands that we determined do not meet the criteria and therefore do not meet the definition of critical habitat. In other instances, the Secretary has chosen to exert his discretion to exclude lands, including private lands, based on a careful weighing and balancing of the benefits of inclusion versus the benefits of exclusion, as provided in section 4(b)(2) of the Act, including consideration of conservation agreements, such as HCPs or SHAs, and the Service's desire to support existing and effective State conservation programs (see Exclusions). However, such exclusion does not indicate that these areas are not essential for the conservation of the species, only that the benefits of exclusion outweigh those of inclusion.

We retained some State-owned lands in all three states included in this critical habitat designation. In general we retained these lands because we found they provided essential contributions to the conservation of spotted owls, especially in terms of complementing the distribution of habitat on Federal lands or filling gaps in Federal ownership. We also found that the benefits of inclusion associated with public education and raising State and local agency awareness of the conservation needs of spotted owls outweighed anticipated minor increases in regulatory requirements, when Federal involvement occurred. See Changes from the Proposed Rule for more information on State lands retained in the final critical habitat designation.

The Service does not compensate private or State landowners for perceived limitations on land use associated with critical habitat designation. Designation of private or other non-Federal lands as critical habitat has no regulatory impact on the use of that land unless there is Federal involvement in proposed management activities. Identifying non-Federal lands that are essential to the conservation of a species alerts State and local government agencies and private landowners to the value of habitat on their lands, and may promote conservation partnerships. There is no indication that Congress intended the Service to acquire all private and State property that is essential to the conservation of listed species and designated as critical habitat.

We provided advance public notice of the proposed rule to revise critical habitat for the northern spotted owl through several avenues. Notice was provided with publication of the proposed rule in the **Federal Register** on March 8, 2012 (77 FR 14062) as well as through numerous local press releases at that time. In addition, notice of public information meetings in each of the three States affected by the proposed rule, as well as a public hearing, was published in the **Federal Register** on May 8, 2012 (77 FR 27010) and again on June 1, 2012 (77 FR 32483); the meetings and hearing were also announced in newspapers of local circulation in the affected areas.

Comment (64): Numerous commenters (State and public) requested that the final rule exclude lands already covered by conservation agreements, such as habitat conservation plans and safe harbor agreements, for a variety of reasons, including concerns about additional or duplicative Federal overlays and regulatory burdens, a lack of need for inclusion, policy consistency, the potential for designation to jeopardize existing agreements or remove incentives for additional conservation, and a recognition of the past conservation benefits of these voluntary agreements. In addition, it is argued that there is no need for an additional Federal overlay on lands that already have conservation designations or governing regulations such as parks, wilderness areas, HCPs, SHAs, and State forest practices rules.

Our Response: Please see our response to *Comment (63),* above. As described, we individually evaluated each conservation agreement in place within the proposed critical habitat designation, including State and private lands with HCPs, SHAs, conservation easements, or other established conservation partnerships. Following a careful weighing of the benefits of exclusion versus inclusion, the Secretary has chosen to exert his discretion to exclude lands covered by such agreements. In addition, the Secretary has chosen to exclude all congressionally-reserved natural areas (wilderness areas, national parks), State parks, and private lands from the final designation. Please see the Exclusions section of this document for details of the analyses that led to the exclusion of these areas from the final designation.

Comment (65): Numerous State commenters (CALFIRE, Oregon Department of Forestry, Washington Department of Fish and Wildlife, Washington Department of Natural Resources), Federal (USFS, BLM), and public commenters disagreed with the need to include public lands including Federal lands (e.g., ''matrix'' land, adaptive management areas, experimental forests, O&C Lands, and congressionally reserved wilderness areas, national scenic areas, and national parks), State lands (e.g., State parks, State forests, State forest trust lands), and county lands in the final rule for a variety of reasons, including additional and redundant regulatory burdens and requirements, economic and social impacts, potential inconsistency with existing laws and policy, existing protections, a lack of additional conservation benefits, limits on research or needed management activities (e.g., fuel reduction, restoration, or insect control), mapping errors, insufficient justification supporting inclusion, and potential disincentives for preserving habitat.

On the other hand, numerous commenters (both from other State agencies, as well as the public) supported the inclusion of public lands including Federal lands, State lands, tribal lands, and county lands for a variety of reasons, highlighting the conservation the value of this habitat, consistency with the best available science, the need for increased protections in some lands, and the realization there would be limited to no impacts to management.

Our Response: The critical habitat designation includes those lands that meet the definition of critical habitat in the Act, and which the Service has determined are essential to provide for the conservation of the northern spotted owl. In designating these lands, we have further considered their ownership, management, contribution to northern spotted owl conservation, existing protections, economic impacts, and other relevant factors, and determined it is appropriate and necessary to include them in the final critical habitat network to best ensure successful northern spotted owl conservation.

Where possible we prioritized the inclusion of Federal lands over other land ownerships, but where Federal lands were sparse or nonexistent we incorporated other ownerships in order

to design and designate an effective critical habitat network. As noted in our response to *Comment 64,* in cases where our analysis of the benefits of exclusion outweighed those of inclusion, such as when conservation agreements and partnerships have been developed with the Service, we have excluded State or other public lands from the final designation (see Exclusions).

Our proposed rule (77 FR 10462; March 8, 2012) identified several different possible outcomes of that proposed revision, depending on various areas considered for exclusion. Among the exclusions of public lands under consideration were all congressionally-reserved natural areas and all State lands. Of the congressionally-reserved natural areas under consideration, we have excluded all congressionally-reserved natural areas and State Parks from this final designation (see Exclusions). In addition, private lands were also excluded, following a careful analysis of the benefits of inclusion versus exclusion. In other cases, lands were retained in the final designation for a variety of reasons; for lands that were considered or proposed for exclusion, but not excluded in this final designation, those decisions are described in the section Changes from the Proposed Rule.

We recognize the concern over the inclusion of certain Federal lands in the designation of critical habitat for the northern spotted owl, and particularly of lands in the matrix land use allocation or the O&C lands. As described in the section Criteria Used to Identify Critical Habitat and elsewhere in this rule, we looked to Federal lands first for the conservation of the northern spotted owl, in part because Federal agencies have a statutory mandate to contribute to the conservation of listed species. Secondly, because the protections of critical habitat are triggered only in the case of a Federal nexus, those protections are always in place on Federal lands; thus the benefit of including Federal lands in critical habitat can potentially be significant. Finally, we only included lands in the designation if they meet the definition of critical habitat; that is, if they play a truly essential role in the conservation of the species. In some areas, for example the O&C lands, our modeling results indicated that those Federal lands make a significant contribution toward meeting the conservation objectives for the northern spotted owl in that region, and that we cannot attain recovery without them. Likewise, in addition to our modeling results, peer review of both the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) as well as our proposed rule to revise critical habitat, suggested that retention of high quality habitat in the matrix is essential for the conservation of the species. Population performance based on reserves under the NWFP, for example, fared very poorly compared to this final designation of critical habitat. As described in the section Changes from the Proposed Rule, we tested possible habitat networks without many of these matrix lands, which resulted in a significant increase in the risk of extinction for the northern spotted owl.

Similarly, for the reasons outlined above, we have retained experimental forests on Forest Service lands in critical habitat. This designation includes areas within seven Forest Service experimental forests: H.J. Andrews Experimental Forest, Pringle Falls Experimental Forest, South Umpqua Experimental Forest, and Cascade Head Experimental Forest in Oregon; Wind River Experimental Forest and Entiat Experimental Forest in Washington; and Yurok Redwood Experimental Forest in California. Three of these seven experimental forests are already included in the 2008 critical habitat designation. Our evaluation of these seven experimental forests demonstrates that these areas contain high value occupied habitat for northern spotted owls within their borders. In many cases, the habitat in these experimental forests represents essentially an island of high value habitat in a larger landscape of relatively low value habitat; this is especially true in the Coast Range, a region where peer reviewers particularly noted a need for greater connectivity and preservation of any remaining high quality habitat. These considerations, in conjunction with the inherent benefits of critical habitat on Federal lands, described above, lead us to conclude that there are significant benefits to the inclusion of these experimental forests in critical habitat. As discussed earlier in this document, we recognize the valuable role of these experimental forests, and we encourage continued research and adaptive management on these forests. All of these forests are occupied by the northern spotted owl and we are already consulting with the Forest Service in these areas under the jeopardy standard. The incremental impact of critical habitat is therefore limited to the cost of consultation for the additional adverse modification analysis and any potential project modifications to avoid adverse modification or destruction, if needed; we did not consider the benefit of avoiding these costs through exclusion to outweigh the benefits of inclusion for these areas. As noted in this document, we fully support the research activities in these experimental forests and intend to continue working cooperatively with the Forest Service to ensure the successful continuation of their scientific mission in these areas.

In sum, the best scientific information available indicates that the Federal lands we have included in this final designation are essential to the conservation of the species, and we have retained such areas in the final designation.

Comment (66): Several State and public commenters noted that the northern spotted owl critical habitat designation includes areas of younger forest that may not include the PCEs, and questioned whether this was an artifact of the modeling process or an intentional inclusion of lands for the future development of PCEs and expansion of the northern spotted owl population, as stated in the rule.

Our Response: The essential conservation goal of the critical habitat network is to provide for a stable or increasing northern spotted owl population trend, which we determine will result from, in part, the retention of existing high-value habitat and the development of additional habitat to support more northern spotted owls than currently exist. Some areas of younger forest that do not currently contain all of the PCEs are essential for this purpose. In such cases, we evaluated these areas as if they were unoccupied at the time of listing, and included them in the designation only if we determined that they are essential to the conservation of the species.

Comment (67): Several commenters (State and public) identified specific concerns with the proposed critical habitat maps, including revisions to land ownership or management on both public and private land, noting the inadvertent inclusion of some lands that did not meet the definition of critical habitat and questions regarding the mapping scale and resolution. Several commenters submitted revised or corrected maps for the Service to consider in developing the final rule.

Our Response: We thank the commenters for the information provided. Numerous edits and changes were made to the maps in the final rule, where appropriate, including assessment of specific lands identified to determine whether they met the definition of critical habitat. For example, in the State of Washington, we determined that many small woodlot

owners possess lands that do not provide the PCEs for the northern spotted owl, or that the lands initially identified in the proposed rule are too fragmented or isolated to be essential to the conservation of the species (see *Comment (107)*); such lands were removed from the final designation because they do not meet the definition of critical habitat. In several cases, landowners contacted us and asked for the exclusion of their lands, but we determined that those landowners were not included in the proposed critical habitat. In some cases, changes have been addressed narratively (e.g., the clarification that no private lands in Oregon met the definition of critical habitat and, therefore, were not included in the proposed rule and are not included in the final designation). In cases where mapping errors may have been made in our proposed critical habitat, such errors were corrected.

Comment (68): Several State, Federal (USFS and BLM), and public commenters requested clarification on the implementation of, or modification of, the 500-ac (200-ha) circle we recommended for assessing the effects of an action to critical habitat.

Our Response: Based on both public and agency comment and requests for clarification, the final rule does not identify the 500-acre (200-ha) circle as a recommended scale for determining the effects of an action, but does reference it as a potentially useful scale that could be used in the section 7consultation process. How to best apply it, or other potential scales, will be determined during the consultation process initiated by Federal action agencies proposing projects that may affect areas designated as critical habitat by this rule.

Comment (69): Several State and public commenters questioned the relationship of the impact of barred owl competition on the northern spotted owls, and amount of habitat needed in the critical habitat designation and whether recovery can be achieved without addressing the impacts of the barred owl. Some of these commenters believe barred owl management should occur prior to designation of additional critical habitat areas.

Our Response: The survival of northern spotted owls depends in large part on the protection of habitat. This protection remains crucial to the recovery of the northern spotted owl regardless of whether barred owls are present or not. However, given that barred owls and northern spotted owls are now occupying similar habitats, it is essential to maintain sufficient habitat that meets the needs of northern spotted owls. The extent to which northern spotted owls persist (sometimes undetected) on areas with high barred owl densities is unclear; however, with a second species competing for similar habitat, providing more of that habitat is predicted to increase the ability for northern spotted owls to persist in the presence of barred owls. We identified critical habitat for the northern spotted owl with this essential need in mind. The potential management of barred owls is beyond the scope of this rulemaking, which is limited to the identification of critical habitat for the northern spotted owl. If management of barred owls is implemented and assessed, as is currently occurring under a separate process, the Service may reconsider this critical habitat designation and revise as appropriate.

Comment (70): Two comments suggested the definition of northern spotted owl habitat and patterns of habitat use were inadequate.

Our Response: Northern Spotted owls require areas that are primarily closed canopy with sufficient roost sites and small mammal populations to provide prey. Descriptions of these habitats vary across the range of the species, beyond the simple categories of moist and dry forest, making a specific definition at the landscape scale problematic. In developing the final critical habitat designation for the species, we have provided what we believe are the most specific and useful descriptions of the PCEs for northern spotted owls possible, based on the best scientific information available at this time. We have and will continue to seek new, more detailed information on habitat use over time.

Comment (71): A number of comments (State and public) encouraged an ecosystem approach to land management.

Our Response: The designation of critical habitat for the northern spotted owl is consistent with the NWFP and the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011), both of which take an ecosystem approach to management and recovery actions. The requirement of any such management approach, however, is beyond the scope of this rulemaking, which is limited to the identification of critical habitat for the northern spotted owl.

Comment (72): Several comments (State and public) suggested approaches that provide incentives for landowners to conserve habitat.

Our Response: The Service administers several programs promoting incentive-based conservation efforts on non-Federal land (e.g., Safe Harbor Agreements, Habitat Conservation Plans, and Partners for Fish and Wildlife agreements). We highly encourage landowners to explore opportunities to participate in these and other conservation programs.

Comment (73): The Washington Department of Natural Resources suggested the Service better align designated critical habitat with the agency's management objectives, to more efficiently manage for northern spotted owl conservation.

Our Response: California, Oregon, and Washington have their own natural resource management paradigms; we intend to work with each State within the context of their management objectives to protect northern spotted owl critical habitat and work together toward the recovery of the species.

County Comments

Comment (74): Jefferson County, Washington, requested that we apply critical habitat protections to a considerable amount of owl habitat, and suggested considering additional habitat designations between the Olympics and the Cascade Mountains, in order to increase connectivity and ensure owl recovery.

Our Response: In our process of identifying areas that meet the definition of critical habitat for the northern spotted owl, we identified a critical habitat network that provides the essential life-history functions for the northern spotted owl, including demographic support and connectivity between populations. Our modeling results indicate the spatial extent of the critical habitat designation throughout the range, including between the Olympic Peninsula and the Western Cascades in Washington is sufficient to meet essential recovery requirements. Other areas outside the designation, such as those suggested by the county, do not meet the definition of critical habitat because they are not essential to the conservation of the species, even though we agree with the county that these lands are important and will increase connectivity.

Comment (75): Wasco County, Oregon, commented that it was in the interest of the community to minimize regulatory burdens from designated critical habitat.

Our Response: We recognize that the designation of critical habitat is often perceived as a potential regulatory burden. However, we wish to reiterate that the regulatory effect of critical habitat is the requirement for Federal agencies to consult with the Service on actions they carry out, fund, or authorize that may affect the designated critical habitat of threatened species or

endangered species. Critical habitat does not directly impose regulatory restrictions on State land managers or on private landowners where there is no such Federal nexus. We do not believe the designation of critical habitat will result in a significant regulatory burden on Federal land activities because of (1) the cooperative nature of our consultation process under the Act with the Forest Service and BLM, and (2) because of the existing requirement that these agencies have to consult on the effects of proposed actions on northern spotted owls. Our approach was to design a critical habitat network that provides for essential northern spotted owl recovery needs but designate as small an area as possible, and to rely primarily on public lands. We have excluded all congressionally-reserved natural areas (wilderness areas, national parks), State parks, and private lands from this final designation of critical habitat.

Comment (76): Del Norte County, California, expressed concern that the proposed critical habitat designation will create a regulatory hurdle that will impede the construction of vital infrastructure projects (roads, bridges, power lines, and other utilities).

Our Response: Chapter 7 of the DEA discusses the potential economic impacts to road and bridge construction and maintenance, and installation and maintenance of power transmission lines and other utility pipelines. The analysis concludes that all potential conservation efforts associated with linear projects are expected to result from the presence of the northern spotted owl, not the designation of critical habitat, and are thus considered baseline impacts (see paragraphs 315 through 320 of the DEA). Incremental costs attributable to critical habitat are limited to the administrative costs of additional staff time spent by Federal agency staff and the Service to include critical habitat effects analyses in the section 7 consultation on these projects. Therefore, we do not believe that the designation of critical habitat for the northern spotted owl will result in significant regulatory burden to these projects.

Comment (77): Del Norte County, California; Wasco County, Oregon; and Klickitat and Skamania Counties, Washington, requested exclusion of all lands including Federal, State, and private lands within these counties in the final rule. They expressed concern regarding economic issues, a lack of appropriate northern spotted owl habitat within the counties, a lack of evidence that including these lands would actually help the species recover or avoid extinction, and a lack of need for or benefits from additional protections due to existing standards and guidelines.

Our Response: The critical habitat designation includes those lands the Service determined are essential to provide for the conservation of the northern spotted owl through a state-of-the-art modeling process that incorporated the latest expert knowledge on the habitat needs of northern spotted owls. In designating these lands we have considered their ownership, management, contribution to northern spotted owl conservation, existing protections, economic impacts, etc., and determined it is appropriate and necessary to include them in the final critical habitat network to best ensure successful northern spotted owl conservation. Each of these counties contains habitat that supports northern spotted owl populations that are essential to the conservation of the species.

We recognize that the greatest benefit of critical habitat is realized on Federal lands since the regulatory effect of critical habitat is the requirement that Federal agencies ensure that any actions that they carry out, fund, or authorize do not destroy or adversely affect designated critical habitat. In addition, Federal agencies have a mandate under section 7(a)(1) of the Act to carry out programs for the conservation of endangered species and threatened species. For these reasons, we looked first to Federal lands for the critical habitat essential to the conservation of the northern spotted owl, as described in Criteria Used to Identify Critical Habitat, above, and supporting methodology (Dunk *et al.* 2012b).

Section 3(5)(A) of the Act states that critical habitat is defined as (1) the specific areas within the geographical area occupied by the species at the time it was listed that contain the physical or biological features essential to the conservation of the species and which may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species at the time it was listed, upon a determination by the Secretary that such areas are essential for the conservation of the species. Further, section 4(b)(2) of the Act mandates that such determinations shall be made on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impact of specifying any particular area as critical habitat.

The language of the Act does not restrict the designation of critical habitat to specific land ownership such as Federal lands; thus, lands of all ownerships are considered if they satisfy the scientific criteria indicating that they meet the definition of critical habitat for the specific species. Areas may be removed from the final designation should the Secretary exercise his discretion to exclude such areas subsequent to a weighing of the benefits of exclusion versus inclusion under section 4(b)(2), or if we should determine, based on public comment or other information received following the issuance of the proposed rule, that such areas do not meet the definition of critical habitat (for example, areas that were occupied at the time of listing but do not provide the essential physical or biological features, or areas that may not have been occupied at the time of listing and were proposed for designation, but are not essential to the conservation of the species).

As described in the proposed rule (March 8, 2012; 77 FR 14076, p. 14099), we evaluated critical habitat scenarios that prioritized Federal lands first as well as scenarios without regard to landownership. In all cases, if the scenarios under consideration provided equal contribution to recovery, we chose the scenario that prioritized publicly owned lands. State and private lands were included only if they were essential to achieve conservation of the species after considering the contribution of Federal lands. Based on information received during the public comment period, in several cases we refined the critical habitat boundaries to remove areas of private lands that do not meet our criteria for critical habitat (for example, new information indicating that the areas in question lack the PCEs, due to recent timber harvest, stand-replacing fires, or other such events). In others, the Secretary has chosen to exclude lands from the designation. In such cases, exclusion does not signal a determination that these areas are not essential to the conservation of the species, but only that the Secretary has determined that the benefits of exclusion outweigh those of inclusion. All congressionally-reserved natural areas (wilderness areas, national parks), State parks, and private lands have been excluded from this final designation of critical habitat for the northern spotted owl (see Exclusions).

We reduced critical habitat in all four of these counties across all ownerships as we refined our proposal. In response to comments, we used additional information sources to very carefully identify and retain areas that were best suited to meeting the unique

conservation needs for northern spotted owl conservation that are associated with the geographic location of these counties.

The Columbia River, which forms the southern boundaries of Skamania and Klickitat counties, presents a formidable obstacle to dispersal of northern spotted owls. Maintaining demographic exchange between northern spotted owl populations in Washington and Oregon requires both maintenance of a robust population of potentially dispersing owls, and quality habitat as near to the Columbia River as possible to increase the likelihood of dispersing owls successfully crossing the river. Critical habitat in Skamania and Klickitat counties plays a key role in preventing the demographic isolation of Washington spotted owls, and preventing isolation is widely recognized as an essential feature of sustaining wildlife populations. The designated lands in Wasco County, Oregon, contribute to this cross-Columbia River connection, as well as providing sites for northern spotted owl reproduction. In Del Norte County, California, designated lands contribute to demographic support to the overall northern spotted owl population, but also function for connectivity across the landscape and for habitat that can be colonized by young owls. In short, the designated lands in all these counties are part of a network that supports northern spotted owl sites for reproduction, habitat available for colonization by young, and habitat that connects populations across the range of the species, all of which are, in concert, essential to provide for the conservation of the species.

Our economic analysis indicated that Del Norte and Skamania counties may be more sensitive to future changes in timber harvests, industry employment, and Federal land payments, due to recent socioeconomic trends. Timber harvest changes related to critical habitat designation are one potential aspect of this sensitivity. Between 1989 and 2009, timber industry employment declined by 70 percent or more in Del Norte and Skamania counties. These counties also experienced the greatest declines in timber harvests and timber industry employment. Skamania County is also highly reliant on Federal payments to counties, with these payments representing between 26 and 50 percent of total revenues. We considered all these factors while evaluating comments from these counties.

The potential impact of the designation of critical habitat on timber harvest levels, and whether that change will be positive or negative, is uncertain. Therefore, how critical habitat designation may impact the timber industry in terms of future harvest levels, employment, and revenue-sharing payments to counties is also uncertain. As outlined in the economic analysis timber harvest may increase, decrease or stay substantially the same as recent timber harvest levels depending on how the Forest Service and BLM decide to manage their lands within the designation. Furthermore, timber industry employment is affected not only by harvest trends but also by fluctuations in national and international markets; changes in land ownership; and increasing mechanization and productivity in the industry. Our economic analysis also indicated the potential for beneficial economic and ancillary effects of spotted owl conservation due to critical habitat designation, but monetizing effects such as improved water quality and aesthetic improvements remains challenging. Finally, our analysis of the incremental impacts of critical habitat designation suggested that the annual administrative costs associated with designation were likely to be relatively low.

Our weighing of the relative benefits of inclusion in critical habitat integrated (1) the relative sensitivity of counties to economic impacts associated with critical habitat designation, (2) uncertainty regarding potential economic effects, (3) our expectation that incremental administrative costs may be minor, and (4) modeling results that indicated essential conservation functions of habitat in these counties. Based on these factors the Secretary has chosen not to exert his discretion to exclude these lands from critical habitat.

Comment (78): Del Norte County, California, requested that the Service exclude all congressionally reserved areas from critical habitat.

Our Response: All congressionally reserved natural areas have been excluded from this final designation of critical habitat, as described in the Exclusions section of this document.

Comment (79): One commenter stated that the O&C Act limits the authority of the Service in designating critical habitat.

Our Response: The O&C Act (pertaining to lands in Oregon and California) does not limit the Service's authority to designate critical habitat for the northern spotted owl. The designation of critical habitat is not a land use allocation and does not impose management prescriptions. Under section 7(a)(2) of the Act, each Federal agency must insure that any action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of the designated ''critical habitat'' of the species. 16 U.S.C. 1536(a)(2). To help action agencies comply with this provision, section 7 of the Act and the implementing regulations set out a detailed consultation process for determining the impacts of a proposed activity on species listed as threatened or endangered, or its designated ''critical habitat.'' 16 U.S.C. 1536; 50 CFR part 402. In *Seattle Audubon Society* v. *Lyons* (''*Lyons*''), 871 F. Supp. 1291 (W.D. Wash. 1994), the district court held that ''the O&[C Act] does not allow the BLM to avoid its conservation duties under NEPA or the Act * * *'' *Id.* at 1314. The critical habitat designation does not preclude the sustained-yield timber management of O&C lands consistent with the above requirements of the Act.

Comment (80): One commenter stated that the Service failed to explain why revising the designation of critical habitat for the northern spotted owl is ''exempt'' under sections 2 and 3 of the Executive Order 13132 on Federalism.

Our Response: We have complied with E.O. 13132 by explaining why the rule does not have federalism implications, impose substantial direct compliance costs on State and local governments, or preempt State law so that a federalism summary impact statement pursuant to section 6 of the executive order is not required. The designation of critical habitat directly affects only the responsibilities of Federal agencies through section 7(a)(2) of the Act. The Act does not directly impose other duties with respect to critical habitat on either States or local governments and as a result does not have substantial direct effects on the States and local governments, the relationship between the national government and the States, or the distribution of powers and responsibilities among the various levels of government. Sections 2 and 3 of E.O. 13132 set out Fundamental Federalism Principles and Federalism Policymaking Criteria, respectively. Within the framework of the Act, which requires the Service to designate critical habitat to the maximum extent prudent and determinable, we have adhered to the concepts discussed in these sections. For example, even though the rule does not have federalism implications, we strongly urged the States and county governments to provide comments to us and provided

them an additional period for comment to ensure they had an opportunity for thorough review. Our economic analysis examined potential indirect impacts of the rule on all who may participate in section 7 consultations, and that was available for comment by the States and counties as well. In addition, we have also taken into account State law protections for northern spotted owl critical habitat in our decisions whether to exclude areas under section 4(b)(2) of the Act.

Comment (81): Several counties, including Del Norte County, California, and Wasco County, Oregon, expressed concerns about the impact of barred owls on the northern spotted owl, and questioned whether recovery can be achieved without addressing the impacts of the barred owl. Some of these commenters believe barred owl management should occur prior to designation of additional critical habitat areas.

Our Response: The survival of northern spotted owls depends in large part on the protection of habitat—this protection remains crucial to the recovery of the northern spotted owl regardless of whether barred owls are present or not. Given that barred owls and northern spotted owls are now occupying similar habitats, it is essential to maintain sufficient habitat that meets the needs of northern spotted owls. The extent to which northern spotted owls persist (sometimes undetected) on areas with high barred owl densities is unclear. With a second species competing for similar habitat, providing more of that habitat may increase the ability for northern spotted owls to persist in the presence of barred owls. If management of barred owls is implemented and assessed, the Service may reconsider this critical habitat designation and revise as appropriate.

In our separate actions investigating possible barred owl management, we can, and are, modeling some approaches with and without barred owl competition effects on the northern spotted owl, and will continue to do so as new information becomes available. Recent research (Wiens 2012) indicates that population performance of both northern spotted owls and barred owls is greatest when high-quality habitat is most abundant, and most peer reviewers supported the approach of conserving more habitat to help offset the impact of the barred owl on the northern spotted owl.

County Comments on Active Management and Fire Management

Comment (82): Several counties including Wasco County, Oregon, and Del Norte County, California, requested that the Service promote active management activities within critical habitat to reduce fire risk and reduce fuels, and raised the concern that critical habitat designation could reduce or delay the ability of land managers to manage fuels and thus increase risks from wildfire.

Our Response: This rule does not establish management prescriptions for lands designated as critical habitat. However, the Service has made considerable effort to discuss, for the benefit of land managers, potential approaches to active forest management in dry forests, including actions that manage fuels and restore ecosystem health. We encourage land managers to consider active management of their forests that balances short-term impacts with long-term beneficial effects that ultimately support long-term conservation of the northern spotted owl. In dry forests, this could include using a landscape assessment approach to improve the estimation of effects of management actions on northern spotted owl habitat and to better identify and prioritize areas for treatments. The assessment may be used to provide support and rationale for treatment, especially in areas where active forest management actions appear to be in conflict with the conservation of high-value northern spotted owl habitat.

The draft economic analysis (DEA) addressed the potential impacts of critical habitat on fire management in Chapters 4 and 8. In Chapter 4, the DEA discussed the fact that ecological fire salvage activities could result in incremental economic effects. Due to data limitations and fire location uncertainty, however, these effects were not quantified. In the benefits discussion in Chapter 8, the DEA recognized that it is possible that the designation could result in increased resiliency of timber stands associated with improved timber management practices, such as thinning, partial cutting, and active adaptive forest management and monitoring. These efforts may reduce the threat of catastrophic events such as wildfire, drought, and insect damage. This in turn may generate benefits in the form of reduced property damage.

Comment (83): Jefferson County, Washington, encouraged the Service to determine adverse modification at a finer scale, such as the owl's home range.

Our Response: The final rule establishes that the scale of the adverse modification determination will be ''the entire designated critical habitat, as described below, with consideration given to the need to conserve viable populations within each of the physiographic provinces identified in the Revised Recovery Plan (USFWS 2011, Recovery Criterion 2).'' The Service believes the entire designated critical habitat is the appropriate scale for this analysis because our determination is whether implementation of the Federal action would preclude the critical habitat from serving its intended conservation function or purpose. That conservation role of critical habitat is to conserve the listed species throughout its range, which is closely aligned with the entire critical habitat designation. Therefore, the entire designation is the most appropriate scale for the adverse modification determination. However, a proposed action that compromises the capability of a subunit or unit to fulfill its intended conservation function or purpose (e.g., demographic, genetic, or distributional support for spotted owl recovery) could represent an appreciable reduction in the conservation value of the entire designated critical habitat.

Comment (84): Wasco County, Oregon, requested that the Service do an Environmental Impact Statement to ensure a full analysis of the effects of the critical habitat designation has been done, including a fuller picture of potential economic and social impacts.

Our Response: The critical habitat proposal was fully compliant with NEPA. Economic and social effects are not intended by themselves to require preparation of an environmental impact statement. 40 CFR 1508.14. We have determined, for the reasons contained in our Finding of No Significance, that an environmental impact statement is not necessary.

Comment (85): Klickitat County, Washington, asserts that the Service has not adequately considered ''forest vulnerabilities'' and potential economic impacts to local communities, and is inconsistent with the Presidential Memorandum to the Secretary of the Interior dated February 28, 2012.

Our Response: We disagree with the assertion that the Service has not adequately considered ''forest vulnerabilities'' in this designation of critical habitat. If we correctly understand ''forest vulnerabilities'' to include all those natural and human induced disturbance processes that have the potential to change the structure and function of forests, these factors played a prominent role in our entire approach to this designation. We believe this rule, along with the Revised Recovery Plan for the Northern Spotted Owl, provides

a thorough explanation of how past management and future disturbance can affect habitat quality for spotted owls, and especially how ecological forestry might be used to manage these effects.

The purpose of the economic analysis is to provide the Secretary of the Interior with information to consider potential economic impacts and analyze whether the benefits of excluding a particular area may outweigh the benefits of including that particular area as critical habitat based on potential disproportionate economic impacts. Chapter 6 of the FEA provides a detailed socioeconomic profile of each of the 23 counties (including Klickitat County, Washington) containing proposed critical habitat subunits. The analysis presents data on the percent change in timber production between 1990 and 2010 for each county, and on the percent growth of annual industry employment between 1989 and 2009 for each county. In addition, the analysis presents data on Federal land payments to each of the 23 counties as a percent of the total local government revenue in FY 2009, demonstrating the relative importance of these funds to each County's budget. We find the information provides sufficient context for understanding relative economic circumstances and the potential incremental impacts of the designation to local communities across the designation.

The section ''Consistency with Presidential Directive'' in our Executive Summary describes how we have addressed the points raised in President Obama's Memorandum of February 28, 2012.

Comment (86): Jefferson County, Washington, encouraged the Service to consider the effects of critical habitat designation on ecosystem services, such as drinking water, hunting and fishing, carbon storage, and erosion and flood control.

Our Response: The Service recognizes that much attention has been paid nationally and globally to valuing ecosystem services provided by landscapes. Published, peer-reviewed studies provide information on values of multiple categories of ecosystem services (e.g., agricultural production, water quality regulation, carbon storage and sequestration, recreation, aesthetic values, etc.) across a variety of land use types (e.g., wetlands, forests, etc.). Over the past 20 years, multiple studies have relied on this literature to develop large-scale benefits transfer analyses in order to estimate a total value of a parcel of land, a watershed, a State, or even the planet (e.g., Costanza 1997, as described in the comment letter). We believe that improving native ecosystems is a benefit to the species that rely on them, is consistent with the goal of the Act and will improve all these ecosystem functions.

Public Comments

Active Forest Management

Comment (87): One commenter agreed that the Service is not able to predict the outcome of section 7 consultations, but expressed concern that land management decisions would be made, using the critical habitat rule for justification of these outcomes. A suggestion was made to eliminate or modify portions of the critical habitat rule that encourage active management within critical habitat.

Our Response: The Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) and the NWFP recommends certain types of active forest management within the range of the northern spotted owl to meet various management goals. Our critical habitat rule refers to these recommendations. The Revised Recovery Plan encourages careful consideration and incorporation of specific and appropriate information when deciding which actions, if any, are appropriate for active forest management within critical habitat. However, we are not able to predict where or what types of actions will be proposed within northern spotted owl critical habitat, nor is it within the authority of this rulemaking to prescribe where or what types of actions will take place. The actual management activities that may take place within critical habitat will depend on future management decisions by the land managing agencies consistent with their land use plans and the legal authorities under which they operate, and in consultation with us under section 7 of the Act for those activities involving a Federal nexus.

Comment (88): Several commenters raised concern over the creation of early-seral habitats. The points raised a concern over the removal of current habitat to create early-seral habitat, expressed a need to make use of natural disturbances to achieve early-seral habitat, and questioned the appropriateness of creating early-seral habitat inside critical habitat.

Our Response: Recent research has informed land managers on the biological value of complex early-seral habitats. The Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) suggests that management of early-seral habitats be considered where they are underrepresented and would improve landscape and biological diversity. Within that context, thinning and targeted variable-retention harvest in moist forests could be considered, where the conservation of complex early-seral forest habitat is a management goal. This approach provides a contrast to traditional clear-cutting that does not mimic natural disturbance or create viable early-seral communities that grow into high-quality habitat (Dodson *et al.* 2012, p. 353; Franklin *et al.* 2002, p. 419; Swanson *et al.* 2011, p. 123; Kane *et al.* 2011, pp. 2289–2290; Betts *et al.* 2010, p. 2127, Hagar 2007, pp. 117–118). Swanson (2012, entire) provides a good overview and some management considerations. The Revised Recovery Plan does not suggest that high-quality owl habitat or areas currently on a trajectory to become high-quality owl habitat be removed to create early-seral conditions. The Revised Recovery Plan recommends such treatments, if considered by the land management agencies, be applied in matrix areas consistent with the Standards and Guidelines of the NWFP.

Comment (89): One commenter asked how the Service and managers will evaluate forest management strategies without information on the potential effects of these strategies to determine whether they are positive, neutral, or negative.

Our Response: Commercial thinning has been shown to negatively affect northern spotted owls and their prey, and we have included a more detailed discussion of this issue in the final rule. In areas where active management may be appropriate for consideration, the goal is to conserve and restore ecological function; however, we recognize that management agencies may have multiple management goals. In areas where actions such as commercial thinning may be considered (e.g., the matrix land use allocation), we are not encouraging them in areas of high-quality owl habitat.

Comment (90): One commenter requested consideration of the forest thinning direction contained in *Ecologically Appropriate Restoration Thinning in the Northwest Forest Plan Area* (Kerr 2012) as an option for future critical habitat management.

Our Response: We appreciate this suggestion and have integrated the information in this reference into our discussions of forest thinning.

Comment (91): One commenter requested that special management considerations for the East Cascades emphasize management for well-distributed, large, contiguous blocks habitat across the landscape.

Our Response: Special Management Considerations for the East Cascades are identified that management may be required to address the threats to the essential physical or biological features in this region from past activities. Widespread management of large, fully contiguous blocks of habitat east of the Cascades is not ecologically sustainable in many places, due to the dynamic ecological processes and fire regimes that shape the distribution of forested habitats in this region (Williams 2012, entire). We do, however, recommend land managers consider the conservation of larger blocks of current habitat on areas of landscapes where it is more likely to be resistant or resilient to fire and other natural disturbance. We encourage the use of landscape assessments to identify areas important for ecological process restoration and areas that are valuable for northern spotted owl conservation and recovery (see, e.g., NWFP Standards and Guidelines p. C–13).

Comment (92): One commenter noted that the Service should emphasize protection of mid-seral forests so that they may develop into high-quality habitat.

Our Response: We recommend that habitats with high value to the conservation of the northern spotted owl be conserved. High-value habitat includes mid-seral forests as one component. Mid-seral forests that are generally not occupied by northern spotted owls, however, may be appropriate areas for land management agencies to consider for active forest management that may increase their rate of development into high-quality habitats.

Comment (93): One commenter noted that past active management resulted in excessive logging and road building, which led to the threatened and endangered status of species in the Pacific Northwest. Included in this comment are concerns over active management harming water quality, diminishing recreational activities, and increasing fire risk if followup actions (e.g., removal of slash, removal of burn piles, prescribed fire) are not carried out.

Our Response: We have identified the major threats to owl recovery in this rule, including traditional timber harvest that resulted in the removal of large areas of old forest. Active management, in general, may affect water quality and recreational opportunities, but it may also restore habitat conditions or reduce fire risk if implemented properly. We encourage land managers to be mindful of these concerns and to protect important areas from long-term adverse impacts wherever possible.

Comment (94): Several commenters expressed concern that logging in critical habitat and LSRs would increase the risk of extinction of the northern spotted owl, degrade owl habitat, increase the risk of fire, damage forest health, and damage watershed health. Commenters expressed concern about specific logging prescriptions that appear to remove trees or degrade areas that could function as habitat for northern spotted owl, such as mistletoe removal, post-fire logging, or disease management activities. In addition, several thousand commenters submitted similar comments in general support of protections against logging the mature and old-growth forests of the Pacific Northwest and Northwest California due to economic and environmental benefits.

Our Response: The critical habitat rule identifies habitats with high value to the recovery of the northern spotted owl that are essential and will receive regulatory protections under section 7 of the Act where a Federal nexus exists. We emphasize that careful consideration should be given to any forest management activities occurring within northern spotted owl critical habitat. The Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) indicates that active forest management, when applied at appropriate scales and locations, could be a valuable tool in the recovery of the species and conservation of forest ecosystems. Further, we recommend that the focus of these treatments be outside of high-value habitat for northern spotted owls wherever possible and that high-quality habitats be conserved and recruited. Work inside of LSRs should be in accordance with the NWFP Standards and Guidelines. We again note that, although we encourage land management agencies to follow the recommendations for the Revised Recovery Plan for the Northern Spotted Owl, it is beyond the authority of this rulemaking to mandate specific management activities within critical habitat. The actual management activities that may take place within critical habitat will depend on future management decisions by the land managing agencies consistent with their land use plans and the legal authorities under which they operate.

Comment (95): One commenter suggested our treatment of the effects of forest thinning on owls and of fire was incomplete and biased towards supporting thinning treatments in critical habitat.

Our Response: We recognize that more research would be helpful to better understand how northern spotted owls respond to various vegetation management treatments, especially those implemented to address long-term forest health and increasing risk of wildfire. Thinning and other vegetation management may have either negative or beneficial impacts to northern spotted owl habitat depending on how, when, and where the treatments are implemented.

The existing information about the tradeoffs associated with active and passive management in dry forests indicates that strategic application of active management may offer a higher likelihood of achieving conservation objectives than no management. Although passive management can be viewed as more precautionary, this view is rooted in a perspective that considers risks to northern spotted owl habitat from natural disturbance to be relatively low. However, we believe that the weight of evidence from both tracking of habitat removal due to natural disturbance and results from modeled simulations of fire dynamics suggest that risks of habitat loss due to natural disturbance is high enough to warrant consideration of strategic active management within critical habitat by land managers, especially in forested plant associations that typically have frequent or mixed-severity fire regimes (Buchanan 2009, pp. 114–115; Healey *et al.* 2008, pp. 1117–1118; Roloff *et al.* 2012, pp. 8–9; Ager *et al.* 2007, pp. 53–55; Ager *et al.* 2012, pp. 279–282; Franklin *et al.* 2009, p. 46; Kennedy and Wimberly 2009, pp. 564–565). In the final rule, we have refined and expanded our discussion of ways land managers might implement active management to minimize potential risks to northern spotted owls and their habitat, and provide appropriate safeguards in the face of scientific uncertainties surrounding disturbance dynamics in dry forests and northern spotted owl responses to management. In addition, active adaptive forest management may prove to be an essential tool for reducing uncertainties and increasing the conservation effectiveness of active management for northern spotted owl habitat.

Comment (96): Several commenters expressed concern over the justification of projects that encourage timber harvest in suitable northern spotted owl habitat, including the pilot projects guided by Drs. Johnson and Franklin that are occurring in BLM's pilot projects out of the Roseburg and Coos Bay BLM offices.

Our Response: The Service is working with land managers and scientists to

minimize impacts to northern spotted owl's essential habitat, and owl conservation as a consequence of timber harvest and other vegetation management projects. We worked closely with Dr. Norm Johnson, Dr. Jerry Franklin, and the Roseburg and Coos Bay BLM offices to evaluate these pilot projects, which are not in LSRs and are consistent with requirements of the NWFP. The Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) recommends applying ecological forestry techniques as a way of reducing impacts to northern spotted owl habitat in areas proposed for timber harvest. In general, northern spotted owl habitat in moist forests that is on a trajectory for development into late-successional conditions is not in need of active management to enhance its development. The Service recommends that land managers consider thinning and other regular management in critical habitat, when the goal is to improve or maintain northern spotted owl habitat and long-term forest health. Specific conditions vary as will determinations of where, when and how to apply management. The actual management activities that may take place within critical habitat will depend on future management decisions by the land managing agencies consistent with their land use plans and the legal authorities under which they operate, and in consultation with us under section 7 of the Act for those activities involving a Federal nexus.

Comment (97): Several commenters suggested that the Service should include a full analysis of the risks to northern spotted owl habitat from fire, in an effort to support the recommendations for active forest management, and should also include an analysis of the effects to northern spotted owl habitat from post-fire logging activities in the final rule.

Our Response: First, we must clarify that this critical habitat rule does not take any action or adopt any policy, plan, or program in relation to active forest management. The discussion is provided only for consideration by Federal, State, local, and private land managers, as well as the public, as they make decisions on the management of forest land under their jurisdictions and through their normal processes. Second, there is considerable scientific uncertainty over the risk of fire to northern spotted owl habitat. Where data are available, the literature shows that high-severity fire and increased frequency of fire may be a risk to the nesting function of northern spotted owl habitat (e.g., Kennedy and Wimberly 2009, p. 565). The literature so far is unclear, not only on how much high-severity fire may be a risk to northern spotted owls, but also regarding what spatial arrangement and amount of burned and unburned vegetation or different burn severities may be beneficial or detrimental to northern spotted owl occupancy and habitat use. We address this issue in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011), in which we also suggested an adaptive management framework to test hypotheses that will help address this uncertainty. Recovery Action 12 in the Revised Recovery Plan summarizes the literature on post-fire logging and recommends that these types of silvicultural activities focus on conserving and restoring those habitat elements that take a long time to develop (e.g., large trees, medium and large snags, downed wood).

Comments on Ecological Forestry

Comment (98): One commenter noted that the Service is promoting timber harvest activities that are compatible with northern spotted owl critical habitat, but regulations prevent this work from occurring.

Our Response: We believe the activities recommended in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) and discussed in this critical habitat rule are compatible with the Standards and Guidelines of the NWFP. We encourage land management agencies to consider active management of forests that balance short-term impacts with long-term beneficial effects that ultimately support long-term conservation of the northern spotted owl.

Comment (99): One commenter noted that ecological forestry practices are not clearly defined and according to the rule will be different in each situation.

Our Response: Land management decisions on when and where to apply ecological forestry practices are context-specific, based on local conditions, and will be made by the appropriate land managers. The prescription of specific management practices is beyond the authority of this rule. This critical habitat rule and the Revised Recovery Plan (USFWS 2011, entire) provide an overview and multiple scientific references on ecological forestry. We are available to work with land managers to provide technical assistance in further defining ecological forestry practices at finer scales, should land managers be interested in applying such techniques.

Comment (100): Several commenters raised concerns that critical habitat designation would reduce or delay the ability of land managers to manage fuels, that more implementation of fuels reduction activities are needed, that fire resiliency needs to be achieved, and that we consider timber and nontimber resources to manage fuels.

Our Response: The Service has made considerable effort to discuss recommendations and descriptions of active forest management in dry forests, including actions that manage fuels and restore ecosystem health, in this critical habitat rule. This rule is different from previous designations of northern spotted owl critical habitat in that we are recommending a ''hands on'' approach to forest management within critical habitat. We encourage land managers to consider active management of forests that balance short-term impacts with long-term beneficial effects, which ultimately supports long-term conservation of the northern spotted owl. In dry forests, we recommend that land managers consider a landscape assessment approach to improve the estimation of effects of management actions on northern spotted owl habitat and to better identify and prioritize areas for treatments. The assessment may be helpful, especially in areas where other landscape or biodiversity management goals may conflict with the conservation of high-value northern spotted owl habitat. We note that this rule can only provide general advice as to those activities that may be consistent with the designation of critical habitat for the northern spotted owl. The actual activities proposed within critical habitat are dependent upon decisions by the land managers themselves, in accordance with their land use plans and legal authorities.

Comments on Exclusions

Comment (101): Several comments questioned why the proposed critical habitat did not include private lands in Oregon but did in Washington or California, and encouraged the Service to exclude private lands in all three States in the final rule, due to concerns around the regulatory burdens of critical habitat and the lack of need for additional protections, in light of existing conservation agreements and State laws.

Our Response: In this designation of critical habitat, we relied on public lands to the maximum extent possible in determining what lands met the definition of critical habitat in that they either contain essential physical or biological features or are themselves essential for the species' conservation. We looked first to Federal lands for critical habitat; however, in areas of limited Federal ownership, some State and private lands provide areas

determined to be essential to the northern spotted owl, by contributing to demographic support and connectivity to facilitate dispersal and colonization. State and private lands were included only where essential to achieve conservation of the species, and State lands were prioritized over private lands. In Oregon, Federal and State lands identified were sufficient to meet the conservation needs of the owl; in Washington and California, there were some areas where Federal and State lands were not sufficient to meet the population metrics essential to recovery for the species, and some private lands were identified as essential for contributing to the conservation of the species. These private lands were subsequently excluded from the final designation under section 4(b)(2) of the Act (see Exclusions). As discussed in our response to *Comment (104),* such exclusion does not signal that these lands are not important for the conservation of the northern spotted owl, but only that the Secretary has determined that the benefits of excluding these areas outweighs the benefits of including them.

We received several comments from private landowners expressing concern that their land uses would be restricted by the designation of critical habitat, or that jobs would be lost if critical habitat is designated on private lands. Some landowners were under the false impression that their access to Federal funds would be restricted, or that they would be unable to complete forest health improvement projects on their lands if critical habitat were designated there. We reiterate that the regulatory effect of critical habitat is the requirement for Federal agencies to consult with the Service on actions they carry out, fund, or authorize that may affect the designated critical habitat of endangered or threatened species. Activities can continue on private lands with critical habitat in place; it is only if Federal funding or permits are required that the Federal agency involved would need to consult with the Service to insure that the proposed action does not destroy or adversely modify critical habitat. However, as a consequence of the exclusion of all private lands from this final designation of critical habitat for the northern spotted owl, concerns such as those expressed above should be moot.

Comment (102): One commenter expressed concern about the potential impact of designating critical habitat on private lands related to the California Environmental Quality Act (CEQA) regulations, and cited to the marbled murrelet, California red-legged frog, California tiger salamander, and western snowy plovers as examples of increased regulatory impact resulting from critical habitat designation.

Our Response: Our economic analysis concluded that private lands in California and subject to CEQA must comply with the California Forest Practice Rules already in place, regardless of critical habitat. Further, the economic analysis reports that CALFIRE is unlikely to request additional protective measures for habitat beyond those already required by these regulations. Subsequently, we conclude the incremental costs of the designation would be limited to the potential for additional administrative burden under CEQA (IEC 2012b, p. 5–19).

The only other potential regulatory impact to private landowners which we would foresee from the designation of northern spotted owl critical habitat may occur when a proposed project has a Federal nexus (e.g., Federal funding or authorization) and the project may affect designated critical habitat. However, as all private lands have been excluded from this final designation of critical habitat, this should no longer be a concern.

The Service is unaware that the designation of critical habitat for the marbled murrelet, California red-legged frog, California tiger salamander, or the western snowy plover has led to any increase in regulatory impacts to private landowners. While private landowners may have experienced an increased regulatory burden with the listing of these species under the Endangered Species Act, we are not aware of an increased regulatory impact associated with the designation of critical habitat for these species.

Comment (103): One commenter expressed concern that the regulatory burden imposed by critical habitat designation on private lands in California will be exacerbated, because the Service is no longer providing technical assistance for California forest landowners who wish to prepare State-required timber harvest plans.

Our Response: We believe the commenter was mistaken in stating that the Service is no longer available to assist private landowners in the preparation of timber harvest plans in California, as the Service's technical assistance program is still operational and available to assist private landowners in this regard. The Service does not review every timber harvest plan, but is available for review when requested after the initial review by CALFIRE. In addition, since all private lands have been excluded from this final designation of critical habitat, the concern regarding potential exacerbation of regulatory burden is no longer relevant.

Comment (104): Numerous commenters supported including private lands, and urged the Service not to exclude these areas in the final rule for a variety of reasons, including the conservation value of including all lands identified as suitable habitat, the need for connectivity, existing management flexibility and a lack of additional regulatory burden, the opportunity to build cooperative management agreements, and concerns that exclusion is not supported by the best available science and would signal that these lands are not important to the recovery of the species.

Our Response: The Act specifically requires the Service to designate critical habitat for listed species to the maximum extent prudent and determinable, and does not restrict such designation to particular land ownership. Rather, areas that meet the definition of critical habitat, as determined on the basis of the best scientific data available, are proposed for designation. However, section 4(b)(2) of the Act further provides that the Secretary, in designating critical habitat and making revisions, shall take into consideration the economic impact, the impact on national security, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may then choose to exercise his discretion to exclude any area from critical habitat if he determines that the benefit of exclusion outweighs the benefits of specifying such areas as part of the critical habitat, unless that exclusion would result in the extinction of the species.

Lands excluded under section 4(b)(2) are still considered essential to the conservation of the species. Such areas were identified as critical habitat because they either provide the essential physical or biological features, if occupied, or were otherwise determined to be essential, if unoccupied. Exclusion should never be interpreted as meaning that such areas are unimportant to the conservation of the species. Exclusion is based upon a determination by the Secretary that the benefit of excluding these essential areas outweighs the benefit of including them in critical habitat.

In this case, the Secretary has chosen to exercise his discretion to exclude non-Federal lands from the final designation of critical habitat if an existing conservation agreement or partnership is in place that provides benefits that are greater than the benefits

that would be provided by the designation of critical habitat. Such exclusions have only been made following a careful weighing of both the benefits of inclusion and the benefits of exclusion. We wish to emphasize that the exclusion of lands from the critical habitat designation should not be construed as a message that these lands are not important or essential for the conservation of the northern spotted owl, nor should exclusion be interpreted as some indication that these lands are now somehow subject to habitat degradation or destruction because they are not included in critical habitat. Lands excluded on the basis of conservation agreements and the recognition of conservation partnerships are fully expected to continue to make an important contribution to the conservation and recovery of the owl absent the designation of critical habitat. Such lands are excluded only if we have evidence that such expectations for future contributions of the habitat on these lands are well-founded, as evidenced by a conservation easement, habitat conservation plan, safe harbor agreement, or other instrument, or by a proven track record of conservation by the partner in question. The details of our considered analyses of each area under consideration for exclusion are provided in the Exclusions section of this document (above).

Comment (105): Numerous commenters requested that the final rule include lands covered by conservation agreements in the final rule for a variety of reasons, including consistency with existing policy, a need for connectivity, the habitat value of these areas, a lack of explicit population recovery objectives, a need for increased protections and legal safeguards, concerns about the conservation effectiveness and appropriate implementation of these agreements, and a need for additional analysis before they are excluded.

Our Response: As described earlier, the Service carefully evaluated each conservation agreement or partnership under consideration for exclusion on its own merits, and weighed the benefits of exclusion versus inclusion. As described in our response to *Comment (104),* above, we emphasize that the exclusion of such lands does not signal that they are not important to the conservation or recovery of the northern spotted owl, and indeed such exclusions are made only on the basis of our determination that the benefits of exclusion outweigh those of inclusion, and that such exclusion will not result in the extinction of the species.

Comment (106): Several commenters requested that the final rule exclude particular land areas in private ownership (including but not limited to Usal Redwood Forest Company, Hawthorne Timber Company, Mendocino Redwood Company, Rayonier, Sierra Pacific, Pope timberlands, Merrill & Ring's lands, Weyerhaeuser Mineral, SDS Lumber Co., Olympic Resource Management, Green Diamond, and Wauna Lake Club) for a variety of reasons, including economics, additional regulatory burdens and uncertainty, a lack of conservation benefits, mapping errors, effects on existing and future conservation easements and agreements, State protections, ongoing voluntary conservation activities, potential disincentives for preserving habitat, and possible negative impacts to existing partnerships and relationships.

Our Response: No private lands are included in the final designation of critical habitat. Many of these lands were excluded under section 4(b)(2) of the Act; our detailed evaluation of these exclusions is provided in the Exclusions section of this document. In some cases, lands were removed following a review of habitat conditions on the specific parcels identified using 2011 National Agricultural Imagery Program (NAIP) imagery, in response to public comment. Upon review, we determined that lands identified by Rayonier, Pope Resources, Olympic Resource Management, and Weyerhauser Mineral did not meet the definition of critical habitat. Therefore, these lands were removed from the final designation.

Some landowners asked for exclusion from the proposed critical habitat, but were not actually included in the proposed designation in the first place. An example of such a case is Merrill and Ring lands. In other cases, commenters did not submit sufficient location information for us to be certain of the location of the parcel in question; Wauna Lake Club, for example, fell into this category.

In cases where mapping errors may have been made in our proposed critical habitat designation, such that lands that do not meet the definition of critical habitat for the northern spotted owl were inadvertently included within the proposed designation, the mapping in the final rule was corrected, so that those lands are removed from the final designation. Sierra Pacific lands in California, for example, were inadvertently included in the proposed designation due to a mapping error; these lands were removed from the final designation. We similarly made any corrections to area total errors that were identified in comments on the proposed rule, and thank landowners for bringing these corrections to our attention.

All specific requests for exclusion and records of our consideration of those requests are in our record, and available upon request (see **FOR FURTHER INFORMATION CONTACT**).

Comment (107): More than 50 private landowners in Washington State requested individual exclusions for their lands for a variety of reasons, including economics, additional regulatory burdens, a lack of conservation benefits, fire risks, mapping errors, existing conservation agreements, and disincentives for voluntary conservation measures and for preserving habitat.

Our Response: Upon further review, using the underlying aerial photo imagery from the 2011 National Agricultural Imagery Program (NAIP) and Ruraltech's 2007 forestland parcel data, we determined that the vast majority of Small Forest Landowner parcels we examined had either highly fragmented, little, or no northern spotted owl habitat currently present. Based on the combination of parcel size, current habitat conditions, and spatial distribution, we concluded that private lands coded as Small Forest Landowner parcels do not provide the PCEs for northern spotted owls, nor are they essential to the conservation of the species; thus, these areas do not meet the definition of critical habitat, and we have removed them from the final designation of critical habitat for Washington State.

We removed from the final critical habitat designation lands described in 17 comments after confirming that these lands did not contain the PCEs, or that they were too small, fragmented, or isolated to contribute to spotted owl conservation, and therefore did not meet the definition of critical habitat. Lands owned by 19 other commenters that requested removal were not within proposed critical habitat. The land of one commenter was removed to correct a mapping error in the proposed rule. We excluded another commenter's lands due to their completion of a SHA. Finally, 16 commenters did not provide sufficient location information to enable us to unambiguously identify their parcels. Of these 16, we inferred that we likely removed 6 from the final critical habitat designation because the size of the commenters' parcels were very small, making it likely that our process of removing small forest landowners from the final designation included the properties of these commenters. For the remaining 10 commenters, lack of location and parcel size information in

the comments we received made it impossible for us to determine or infer whether these parcels were included in our final critical habitat designation. However, as all private lands were excluded from critical habitat under section 4(b)(2) of the Act (see Exclusions), no private lands remain in the final designation.

Public Comments on Critical Habitat Boundaries

Comment (108): One commenter noted that the inclusion of the term ''necessary'' within the definition of ''conserve'' (16 U.S.C. 1532(2)) indicates that Congress intended a ''high threshold'' for designating land as critical habitat, and that land designated must be required to bring the species to the point of no longer needing the protection of the Endangered Species Act. The commenter further asserts that the Service must show that all specific areas proposed as critical habitat are necessary, essential, and required for the continued existence of the species.

Our Response: The use of ''necessary'' in the definition of conservation does not change the requirements related to critical habitat. Furthermore, the Act provides that the Service ''to the maximum extent prudent and determinable * * * shall * * * designate any habitat of [the species] which is then considered to be critical habitat.'' 16 U.S.C. 1533(a)(3)(A); see also *Center for Biological Diversity* v. *FWS,* 450 F.3d 930, 935 (9th Cir. 2006) (noting Congress' use of the word ''shall'' and holding that ''[i]t follows that critical habitat designations are mandatory''). There are only two exceptions to the mandate that critical habitat be designated at the time of listing. First, designation may be temporarily delayed if critical habitat is ''not determinable,'' e.g., it cannot be identified based on current scientific information. 16 U.S.C. 1533(a)(3)(A); 50 CFR 424.12(a). Second, designation is not required if it is ''not prudent,'' see id., but Congress intended that finding to be made ''only rarely.'' S. Rep. 106–126, at 4 (1999); see also H.R. Rep. 95–1625, at 16–17 (1978) (designation required except in ''rare circumstances'').

We agree that the rule should designate either (1) specific areas within the geographical area occupied by the species at the time of listing that contain physical or biological features essential to the conservation of the species and which may require special management considerations or protection, or (2) specific areas outside the geographical area occupied at the time of listing that are essential to the conservation of the species. We have identified the specific areas that were occupied at the time of listing through historical surveys. We have determined that other areas were occupied at the time of listing (based on the presence of suitable habitat as well as the high probability that nonterritorial and dispersing subadult owls were present). In addition, we analyzed all areas as if they were not occupied and applied the standard applicable to unoccupied habitat. We used the methodology described in both the proposed and final rules to determine which unoccupied areas are essential to the conservation of the species, and have explained why unoccupied habitat in each subunit is essential to the conservation of the species.

For occupied areas, the attributes of forest composition and structure, and characteristics of the physical environment associated with nesting, roosting, and foraging habitat—physical or biological features used by the species—were identified based on published research results and expert opinion and incorporated into a predictive habitat model. We determined that, for the most part, the physical or biological features supporting these known sites are essential to the conservation of the species (the exceptions are owl sites that were isolated or in areas of marginal quality). The special management considerations are described by geographic region and in the subunit descriptions. However, large areas within the species' geographical range had not been surveyed at the time of listing, and we have determined that a designation based solely on the locations of those known territories would not be adequate to conserve the species. Therefore, we used habitat information based on habitat selected by those known owl pairs to identify other areas that were likely supporting northern spotted owl territories at the time of listing or that could support the species' recovery in the future. We then determined where these areas are essential to conservation of the species based on a spatially explicit northern spotted owl population model as described in the proposed rule, and again in this final rule.

Comment (109): One commenter stated that one or more of the PCEs are too general in nature and should be more narrowly clarified or defined. In particular, the comment suggested that PCE #1 and #4 seem to be met by all forested lands.

Our Response: PCE 1 (Forest types that may be in early-, mid-, or late-seral stages and that support the northern spotted owl across its geographical range) identifies the specific forest types that support northern spotted owl life-history needs across the species' range, but is more narrowly refined in that it must exist in concert with one of the other PCEs to meet the definition of critical habitat. PCE 4 (habitat to support the transience and colonization phases of dispersal) is described in the preamble of the proposed rule as those forests with at least an average diameter at breast height (DBH) of 11 inches (28 centimeters) and at least a 40 percent canopy cover. We have included these metrics in the regulatory portion of the final rule to more narrowly clarify the forest structure that meets this PCE. In addition, it is only where these PCEs in the appropriate arrangement and quantity are essential to the conservation of the northern spotted owl that they are selected for designation as critical habitat.

Comment (110): Several commenters believe that additional lands beyond those already designated as northern spotted owl critical habitat are not necessary for northern spotted owl recovery, and the increase in total area is not supported by the science. The commenters suggest that including them will reduce or eliminate timber harvest on designated lands.

Our Response: The continued decline of the overall northern spotted owl population demonstrates that the threats to the species are still having a significant impact on northern spotted owl occupancy, reproduction, and survival. As described in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011), the main threats to northern spotted owls are the past and continued loss of habitat and the competitive effects of barred owls. The increase in designated critical habitat area to help offset these threats is supported by northern spotted owl experts, researchers, and scientific peer reviewers. The results of our modeling efforts presented in Appendix C of the 2011 Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011, Appendix C) and in the Modeling Supplement for this rule (Dunk *et al.* 2012b) show that the 2008 critical habitat network performed worse (greater population declines over time, higher extinction risk) than the 2012 Revised Critical Habitat this revised designation.

The Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) recommends active management of some forest lands using ecological forestry approaches in appropriate stands such that we believe there are widespread opportunities for continued

timber harvest management within the range of the northern spotted owl.

Comment (111): One commenter noted that the Endangered Species Act requires that designated critical habitat only include those areas ''occupied at the time of listing,'' and that any additional areas defined by the Secretary must be essential to conserving the species. The commenter argued that the standards for designating critical habitat for occupied and unoccupied habitat differ, and that Congress did not intend the phrase ''conserve'' to include extending the range of a species. The commenter also asserted that stating that substantially all of the occupied and unoccupied area is necessary does not comply with the statutory requirements.

Our Response: Congress specifically provided for designating unoccupied areas where doing so is essential to the conservation of the species. Congress expressly recognized that ''conservation'' could require designation of areas unoccupied at the time of listing. In this rule, we are designating unoccupied habitat in places where it is essential to the species' recovery; however, we are not designating critical habitat outside the historical range of the species. We are also not designating critical habitat everywhere within the present range of the northern spotted owl.

The proposed rule did not say that ''substantially all of the occupied and unoccupied area is necessary.'' The proposed rule explained how much of each subunit was occupied based on historical survey data, and why the areas of potentially unoccupied habitat in each subunit are essential to the conservation of the species. In addition, the methodology used to determine what is essential was explained in the proposed rule and this final rule.

Comment (112): Several commenters suggested that there was insufficient evidence to determine whether lands proposed as critical habitat were occupied at the time of listing, and questioned the data used for assessing northern spotted owl populations, both at the time of listing and at the present time.

Our Response: Occupancy by individuals of wide-ranging species can be difficult to definitively demonstrate or verify, particularly when different areas are utilized by individuals at different times in their life stages, and when the species responds to survey techniques in a variety of ways. Effectively detecting territorial northern spotted owls in a home range is a well-established technique, but locating nonterritorial or transient northern spotted owls is more difficult, even though they occupy many areas between established home ranges of territorial owls. The Service determined that most of the areas within critical habitat that have the PCEs were occupied at the time of listing by the species. However, as stated in the rule, we have determined all areas within critical habitat to be essential for the conservation of the species. Areas essential to the conservation of the species are not required to be occupied at the time of listing to be included in critical habitat.

For the purpose of developing and evaluating revised critical habitat for the northern spotted owl, we used a definition of ''geographical area occupied by the species'' at the time it was listed consistent with the species' distribution, population ecology, and use of space. We based our identification of ''occupied'' geographical area on: (1) The distribution of verified northern spotted owl locations and (2) scientific information regarding northern spotted owl population structure and habitat associations. While there were approximately 1,500 northern spotted owl pairs identified at the time of listing (1990), subsequent surveys across a larger percentage of the landscape in the mid and late 1990s detected more than 4,000 pairs. Because adult northern spotted owls are long-lived and have high site fidelity, it is reasonable to assume that these sites identified as occupied several years post-listing were also occupied by owls at the time of listing.

In addition, we are not stating that all critical habitat was occupied at the time of listing, but as clearly identified in the proposed rule and this final rule under the section Unoccupied Areas (77 FR 14062, p. 14099), we acknowledge the uncertainty regarding whether some areas were occupied at the time of listing or not (especially those areas used for dispersal or which were likely occupied based on habitat suitability). Therefore, we have evaluated these areas as if they were unoccupied at the time of listing and have found them to be essential to the conservation of the species.

Comment (113): One commenter questioned how some ''occupied'' habitat areas can be considered nonessential while other ''non-occupied'' habitat was considered essential for the conservation of the species.

Our Response: To conserve the northern spotted owl it is essential to have larger, connected areas that are managed for the development of their habitat even though some of those areas may not currently be occupied by the species. As habitat develops over time, both within occupied and unoccupied areas, we anticipate northern spotted owls will colonize the unoccupied habitat and positively contribute to population demographics which contribute to conservation of the species. The closer these currently unoccupied areas are to the improved sites over time the more likely dispersing northern spotted owls will be able to successfully colonize them. By evaluating northern spotted owl population metrics, such as relative population size, population trend, and extinction risk that resulted from each scenario evaluated, we designated only those lands that contain the physical and biological features essential to conserve the northern spotted owl, or that are essential themselves. This network has the potential to support an increasing or stable population trend of northern spotted owls that exhibits relatively low extinction risk, both rangewide and at the recovery unit scale, and achieves adequate connectivity among recovery units. It does not include every known northern spotted owl site. Occupied northern spotted owl sites that are not included are isolated or in small groups with other sites and will provide relatively less demographic contribution to the population than those sites that are in larger, contiguous groups. Therefore, we determined that they did not contain the physical and biological features essential to northern spotted owl conservation.

Comment (114): Numerous commenters requested we maximize the total area included in the designation by including the most area in any of the composites or by including all northern spotted owl habitat across all ownerships.

Our Response: We have designated critical habitat based on the identification of those areas meeting the definition of critical habitat or that are otherwise essential to the conservation of the northern spotted owl. Toward this end, maximizing land area is not the key factor. Our goal was to designate critical habitat that is essential for northern spotted owl recovery but achieves the desired results on as small an area as possible (i.e., it is efficient). This reduces any potential regulatory burdens and land management conflicts, which will increase the likelihood of success at meeting our goals. In addition, designating areas beyond that necessary to achieve the conservation of the species would indicate that we had included areas beyond what is truly essential to the conservation of the

species, and exceeded the intent of the statute.

Comment (115): Several commenters suggested revisions to the boundaries of the proposed critical habitat, including several proposed additions (e.g., lands near Cascade-Siskiyou National Monument, Coquille tribal land, Coos Bay Wagon Road lands, the Olympics/Western Cascade area, etc.) for several reasons, including the conservation value of the habitat, increased connectivity benefits for dispersal and gene flow, the need for additional protections to avoid habitat degradation, and consistency with the best available science and existing policy.

Our Response: When determining what is essential to the conservation of the northern spotted owl, we prioritized Federal, then State, and finally private or Tribal lands. Where Federal and State lands were sufficient to provide for the essential conservation needs of the northern spotted owl as demonstrated through our population modeling in HexSim, no additional lands were added. In addition, in accordance with the provisions of the Act, not all habitat that could be occupied by northern spotted owls was included in the designation. Only areas that meet the definition of critical habitat for the species were designated.

In Washington, we added suggested areas to critical habitat only where updated information about land ownership indicated a change in ownership from private ownership to Federal ownership. This was based on our prioritization of landownerships in the designation, as described above, wherein we looked to Federal lands first for critical habitat, and included State and finally private or Tribal lands only where necessary to achieve the conservation of the species. These areas had not initially been included in the proposal because the ownership information we used had indicated these lands were privately owned, and therefore they were not prioritized for inclusion. These additions occurred in the central Cascade Range of Washington where many sections of industrial timberlands in checkerboard ownership with Federal lands had recently been transferred to Federal ownership. This area of the central Cascades surrounding Snoqualmie Pass has repeatedly been identified as essential to maintaining demographic linkages among spotted owl populations from northern to southern Washington, and from the west slope to the east slope of the Washington Cascades.

Public Comments Regarding the Northwest Forest Plan (NWFP)

Comment (116): Several commenters stated that the rule needs to be more explicit about how it relates to the NWFP, and that the NWFP should direct the management of the critical habitat lands.

Our Response: We have clarified the relationship between the critical habitat rule and the NWFP under the ''Forest Management Activities in Northern Spotted Owl Critical Habitat'' heading. The designation of critical habitat for the northern spotted owl identifies the areas essential for the conservation of the species; it does not supersede the Standards and Guidelines for lands in the NWFP. The Service believes the NWFP has functioned as intended for the retention and development of late-successional forest habitat (Thomas *et al.* 2006; Davis 2012). The NWFP was developed with the expectation that emerging scientific data would be incorporated into the management of Federal forest lands. The discussions of active forest management in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) and this preamble are based on numerous recent scientific study results. We wish to be clear, however, that the inclusion or exclusion of NWFP reserves in the designation of critical habitat changes neither the land allocation nor the Standards and Guidelines for those lands under the NWFP. Nevertheless, we believe that our discussion of active forest management is consistent with the objectives of the NWFP.

Comment (117): One commenter suggested that lands currently managed under the NWFP do not require additional management considerations or protections from designated critical habitat.

Our Response: The Service is not relieved of its statutory obligation to designate critical habitat based on the contention that it will not provide additional conservation benefit. We do not agree with the argument that specific areas and essential features within critical habitat do not require special management considerations or protection because adequate protections are already in place. In Ctr. for Biological Diversity v. Norton, 240 F. Supp. 2d 1090 (D. Ariz. 2003), the court held that the Act does not direct us to designate critical habitat only in those areas where ''additional'' special management considerations or protection is needed. If any area provides the physical or biological features essential to the conservation of the species, even if that area is already well managed or protected, that area still qualifies as critical habitat under the statutory definition if special management is needed.

Comment (118): Numerous commenters asserted the proposed critical habitat rule would result in the weakening of the NWFP, including the dismantling or eradication of the late-successional (and riparian) reserves, and that we should use a variety of approaches explicitly elucidated in the final rule to maintain the LSR network.

Our Response: In designating critical habitat the Service is required to use the best available science to identify specific areas that provide the PCEs or are otherwise essential to the conservation of the species. Our modeling effort and other data identified some nonreserved areas that are high value for the northern spotted owl and essential to the conservation of the species. Additionally, there are portions of reserved allocations that are of relatively low value to the northern spotted owl. As a result of incorporating the best available science, our modeling process demonstrated that the critical habitat network identified here is more effective at conserving the northern spotted owl than the NWFP network of reserves. This is not unexpected, as the LSR network was never intended solely for the benefit of northern spotted owls, but was created to provide for many late-successional species. However, the designation of critical habitat does not change the existing NWFP land use allocations or Standards and Guidelines. The inclusion or exclusion of NWFP reserves as critical habitat changes neither the land allocation nor the Standards and Guidelines for those lands. The Service encourages continued implementation of the NWFP and adherence to the Standards and Guidelines for reserve management.

Comment (119): Several commenters noted the critical habitat rule should adopt the Standards and Guidelines of the NWFP in an effort to protect northern spotted owl habitat, including all late-successional and old-growth forests.

Our Response: In designating critical habitat we are required to identify those lands essential to the conservation of the species through application of the best available science. Our incorporation of state-of-the-art modeling programs, techniques, and data identified those areas, many of which contained late-successional or old-growth forest. However, the purpose of this rule is to designate critical habitat, not to adopt specific standards for its management. The Revised Recovery Plan for the Northern Spotted

Owl (USFWS 2011) recommends the retention of structurally complex forests where they currently exist (Recovery Action 32). We did not find, however, that retaining all northern spotted owl habitat is essential for the conservation of the species, so not all habitat was included.

Public Comments on Competition From Barred Owls

Comment (120): Several commenters recommended that the Service should objectively determine whether the barred owl threat has so overwhelmed the northern spotted owl as to make additions to critical habitat unnecessary, and noted that dealing with the barred owl and habitat threats separately could be detrimental to northern spotted owl recovery.

Our Response: The scientific information available at this time is not adequate to statistically assess the effect of barred owls on any specific conservation strategy or agency action, though these strategies include efforts to address barred owls. The extent to which northern spotted owls remain (sometimes undetected) on areas with high barred owl densities is unclear. However, the threat posed by barred owls does not relieve the Service of its statutory obligation to designate critical habitat for the northern spotted owl under section 4(a)(3)(A) of the Act. Furthermore, suitable habitat is essential for northern spotted owls to persist, with or without barred owls. Our modeling approach for designating critical habitat included barred owl effects on spotted owl population performance. Recent research (Wiens 2012) indicates that population performance of both northern spotted owls and barred owls is greatest when high-quality habitat is most abundant, and most peer reviewers supported the approach of conserving more habitat to help offset the impact of the barred owl on the northern spotted owl.

Public Comments on the Modeling Process

Comment (121): One commenter was critical that the process for combining different models in different modeling regions was unclear, and was also critical that a nonrandom sampling of nesting centers and the approach used to create a contiguous underlying RHS (Relative Habitat Suitability) map using MaxEnt modeling software.

Our Response: Although the RHS values within one modeling region may not be directly comparable to another's, the similarity of each modeling region's strength of selection curves (see Appendix C of the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011)), suggested that the interpretation of RHS values was similar between/among regions. Furthermore, Zonation was run within modeling regions (see Appendix C of the Revised Recovery Plan) to ensure that potential critical habitat units and subunits were well distributed throughout the northern spotted owl's range. We are aware of only one effort to date that has utilized random sampling of a relatively large region within the range of the northern spotted owl (Zabel *et al.* 2003). The demographic study areas were not randomly located, nor were the northern spotted owl location data we used. Thus, the chance exists that it is biased in some way. Nonetheless, given the relatively large sample sizes, and the geographic and habitat variation that exists around northern spotted owl sites in the samples we used, we contend that this is the best data available to use. The Service acknowledges that there is uncertainty in this process, and that this is unavoidable. There exists no perfect rangewide habitat map, no perfect (large) random sample of owl locations, no randomly allocated demographic study areas from which to draw strong range-wide inferences about population trends, nor a perfect understanding of the northern spotted owl's life history. That said, we have used the best data available, thoroughly documented our approach and presented our evaluation of the usefulness of the models we used, and we find they provide a strong foundation using the best available science for informing decisions about critical habitat.

Comment (122): One commenter indicated a need to clarify the basis for the thinning of northern spotted owl location data used in modeling.

Our Response: The basis of the thinning is articulated on pages C–20 and C–21 of Appendix C of the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011).

Comment (123): One commenter indicated that the assumptions for this modeling process were not completely spelled out nor were their validities addressed. For example, the modeling of habitat suitability assumes that core use areas and home ranges of northern spotted owls are relatively constant in size throughout their geographic range, but this assumption is not well supported by the proposed critical habitat, Appendix C of the 2011 recovery plan, or the published literature. Core use areas and home ranges increase in size for northern spotted owls in the northern part of their range versus those in the southern part (Thomas *et al.* 1990). Second, the modeling process for evaluating habitat suitability under MaxEnt assumes that some moderate amount of edge and degree of forest fragmentation is good for demography and fitness of northern spotted owls throughout their geographic range based on Franklin *et al.* (2000), yet this relationship has been shown mainly for northern California and one area in Oregon (Olson *et al.* 2005), not the remainder of the subspecies' range in Oregon and Washington. For example, Dugger *et al.* (2005) found no relationship between the amount of edge and demographic performance of northern spotted owls in southern Oregon; consequently, the validity of this assumption for the entire range of the subspecies is questionable.

Our Response: We did use one spatial scale throughout the northern spotted owl's range for our MaxEnt modeling. We also assumed that territories, in our northern spotted owl HexSim model, were of uniform size (3 hexagons) throughout the northern spotted owl's range. We did not, however, assume home ranges were of equal size throughout the range (see table C–24 in Appendix C of the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011)). We also did not assume that edge or forest fragmentation was good for northern spotted owl demographic performance in our MaxEnt models. We did, however, allow for edge metrics to be included in the models where they had clear effects on the MaxEnt models; however, we did not force them in to the models in modeling regions where they had no effect. It is important to note that, unlike studies that have attempted to evaluate competing mechanistic hypotheses regarding northern spotted owl habitat/climate-demographic relationships (e.g., Franklin *et al.* 2000, Dugger *et al.* 2005), in our MaxEnt modeling process, we did not attempt to evaluate competing hypotheses. Instead, we attempted to develop MaxEnt models that had good discrimination ability, were well calibrated, and were robust (see our response to *Comment (20);* additional discussion is provided on pages C–30 to C–32 of the Revised Recovery Plan, USFWS 2011).

Comment (124): One commenter requested more justification for the choice of features in MaxEnt modeling. For example, the threshold feature was used, but the product feature was excluded. They predicted that product features in particular might be relevant to biological hypotheses (e.g., when nesting habitat is low, increases in foraging habitat don't increase occupancy, but when nesting habitat is

greater, foraging habitat has a greater impact on occupancy).

Our Response: We could have allowed all MaxEnt feature types to be used in our process. The product (interaction) feature would have resulted in even more complex models. However, we were able to develop models without additional complexity (e.g. interaction terms) that worked well for the purposes for which they were developed. Results from model cross-validation and comparisons with independent data sets (USFWS 2011, Appendix C, Table 19, pp. C–39 to C–41) showed that our models were well calibrated and had good ability to predict spotted owl locations (USFWS 2011, Appendix C, Table 20).

Comment (125): Several commenters requested more detail regarding how the different Zonation scenarios from Phase 1 in Appendix C of the Revised Recovery Plan were selected for inclusion in proposed critical habitat. In particular, the reviewers believed that Zonation 70 and 90 scenarios would have provided better modeled northern spotted owl population performance.

Our Response: We assume that the question is about why the 30, 50, and 70 percent of habitat value were chosen for the initial Zonation networks. They were chosen to provide relatively broad side-boards, particularly in regard to network size. To have started with even more extreme side-boards (e.g., Z10 and Z90) would have been excessive because these configurations would have included either a very large amount of land that doesn't have features that would support owls (Z90) or an area so small (Z10) that viable owl populations could not be sustained. It is true that a Z90 scenario would have provided much more area of potential critical habitat, but the amounts of high RHS (> 0.5) in Z70 are nearly identical to those in Z90. In fact, Z50ALL contained 92%, 98%, 99%, and 100% of RHS bins 0.6–0.7, 0.7–0.8, 0.8–0.9, and > 0.9, respectively. Z90ALL contained 100% of the RHS from each bin, but encompassed a much larger area (i.e., for very little added inclusion of high RHS areas, Z90 included millions of additional acres). In effect, moving from Z70 to Z90 adds a lot more area; however, the additional lands added do not contribute much to spotted owl population performance.

Zonation 70 was considered, and subsequently modified in various composite networks we evaluated. We found that simply increasing the area of potential critical habitat networks did not always result in better performance of simulated owl populations in HexSim (e.g., Composite 7 was 13.9 million ac (5.625 million ha) and had an ending population that did not differ (95 percent confidence intervals overlapped) from composites with from 18.2 to more than 20 million ac (7.4 to more than 8.1 million ha)). In some modeling regions, our modeling results suggest that owl populations are likely to remain relatively low; in part due to the relatively small amount of mid-to-high RHS area in them. The population results for Zonation 40, 60, 80 and 90 are provided in our Modeling Supplement (Dunk *et al.* 2012b).

Comment (126): One commenter indicated there were key assumptions used in the modeling process that should be more clearly documented. The reviewer indicated that the proposed critical habitat document refers the reader to the Dunk *et al.* (2012a) Modeling Supplement for a discussion of these assumptions but they were unable to locate them in this document. Not only should the assumptions of the modeling be included in the proposed critical habitat, but the validity of the assumptions should also be addressed.

Our Response: The key assumptions used in our modeling process are provided in Appendix C of the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011), and referenced in our proposed rule. Appendix C also provides a thorough discussion of our process of testing and cross-validating our models. We have also clarified this in the final version of our Modeling Supplement (Dunk *et al.* 2012b).

Comment (127): One commenter noted that the modeling of population response and viability under HexSim assumed that recruits into the population become co-owners of their mother's territories, yet most owls are recruited into the population in different areas after extensive dispersal over several months and sometimes years. They asked to what extent are these assumptions valid, and how would lack of validity potentially affect the results of the modeling process?

Our Response: In the northern spotted owl HexSim model we assumed that juvenile birds, prior to dispersal, co-owned their mother's territory. However, juveniles were forced to disperse in the model. The recruits are only co-owners until they fledge, and fledging always takes place in the first year of life. Further, in the modeling two post-fledging females did not share a territory.

Comment (128): One commenter noted that composite 3 performed poorer than composite 1 based on population performance, yet composite 4 was based on the network in composite 3 and composite 5 was based, in part, on that in composite 4. This sequence of models based on the poor performance of composite 3 does not make sense from an ecological or conservation stand point. It is obvious that composites 1–7 do not represent the complete range of habitat networks that might provide for sustainable populations of northern spotted owls in most of the modeling regions. They contend that there should have been more attention paid to increasing habitat for northern spotted owls and providing for sustainable populations in all modeling regions instead of increasing efficiency. They understood the need to make any habitat network efficient but believed that this was a case where efficiency has trumped conservation of habitat for the northern spotted owl and other species associated with old forest ecosystems.

Our Response: Relatively poorer performance (as noted by the reviewer) is not equivalent to ''poor performance.'' In fact, the 95 percent confidence intervals of the mean estimated population sizes at time-step 350 overlapped for composites 1, 3, 4 (highest point estimate), 5, 6, and 7 indicating that the differences may not be statistically significant. Furthermore, although Composite 3 did perform worse than Composite 1 in terms of exceeding pseudo-extinction thresholds, Composite 7's performance was nearly identical to Composite 1's. Thus, we disagree with the assertion that our sequence was based on poorly performing composites. There are an infinite number of possible potential critical habitat networks that could have been evaluated. Efficiency, as used by the Service in this effort, did entail reducing the size of potential critical habitat networks, because our charge under the statutory definition of critical habitat is to designate only those lands occupied at the time of listing that contain essential physical and biological features or unoccupied lands that are essential.

Comment (129): One commenter indicated that the process for comparing GNN (vegetation) data with owl nest sites and foraging areas is unclear. The reviewer asked whether GNN data indicated that nest site centers were characterized by large, old trees with closed canopy forests and stated that this process needs better explanation.

Our Response: The process for developing models of nesting and foraging habitat is described in detail on pages C–14 through C–43 in Appendix C of the 2011 Revised Recovery Plan for the Northern Spotted Owl. Nesting and roosting habitat was characterized by

large, old trees with closed canopies; however, the specific vegetation characteristics included in the models varied by region. Our confidence that the GNN layer was sufficiently accurate to support our modeling process was based on several formal and informal evaluations. First, we evaluated northern spotted owl habitat modeling conducted by the Northwest Forest Plan Interagency Monitoring Program (Davis *et al.* 2011), which was also based on the GNN data. This effort used GNN and MaxEnt to predict northern spotted owl nesting habitat, obtaining models quite similar to the NR models in our modeling effort. We also obtained less formal, but very useful, feedback from a number of USFS scientists who had made comparisons between GNN output and their own field-typed northern spotted owl nesting habitat with good results. Finally, as described in Appendix C of the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011), we evaluated the reliability of the MaxEnt models' predictions (RHS) and found that the models had good ability to predict northern spotted owl locations. Systematic inaccuracy of the GNN data would be unlikely to result in the accurate predictions we obtained in our modeling. In addition, please see our responses to *Comment (19)* through *Comment (22)* for details on our testing, cross-validation, and use of GNN and MaxEnt.

Comment (130): One commenter stated that more information on the ''independent test data sets'' used for model cross-validation is necessary before they are acceptable as an adequate test. In particular, if these data sets suffer from the same non-random sampling as the training data, then they will not aid in determining whether the RHS and AUC values are biased by the nature of the sampling or not.

Our Response: As described in Appendix C of the Revised Recovery Plan (USFWS 2011, p. C–20), we expended substantial effort on the verification of both the spatial accuracy and territory status of each site center used in our data set. We received high quality data from northern spotted owl demographic study areas (DSAs), and obtained a large set of additional locations from the NWFP Effectiveness Monitoring Program. We also obtained and verified data sets from private timber companies, the USFS Region 5 NRIS database, and a number of research and monitoring projects throughout the range of the northern spotted owl. We are aware of only one effort to date that has utilized random sampling of a relatively large region within the range of the northern spotted owl (Zabel *et al.* 2003). Because of the spatial extent of the range of the northern spotted owl (more than 23 million acres), we do not have the luxury of having equal survey effort throughout the region. The demographic study areas are not randomly located, nor are the northern spotted owl location data we used. Nonetheless, given the relatively large sample sizes, and the geographic and habitat variation that exists around northern spotted owl sites in the samples we used, we consider this information to represent the best available scientific data for our purposes, and are not aware of any alternative data sets.

Comment (131): One commenter expressed concern that the encounter rates of northern spotted owls with barred owls found in Forsman *et al.* (2011) were reduced downward to a maximum rate of 0.375 even though there is strong evidence in Forsman *et al.* (2011) that the rate is higher in some modeling regions, and Wiens *et al.* (2011) has shown that abundance of barred owls (and encounter rates) is much higher in the Coast Ranges of Oregon than initially thought or is documented in Forsman *et al.* (2011). The lower encounter rates of northern spotted owls with barred owls that were used in Phases 2 and 3 of the modeling represent more optimistic performances of northern spotted owls to habitat conditions than is likely to occur in reality. The reviewer contends that it would have been more appropriate to use Zonation 70 or even 90 to a greater extent in some modeling regions, than to arbitrarily reduce the barred owl encounter rate to a maximum of 0.375 in order to provide for sustainable populations in all modeling regions.

Our Response: The modeling we conducted suggested that the larger the barred owl encounter probability was, there was less variation in northern spotted owl population performance among potential critical habitat networks (even when network size varied by more than a factor of 2); effectively all populations did uniformly poorly. However, when barred owl encounter probabilities were lower (e.g., 0.25), considerable variation in northern spotted owl performance among potential critical habitat networks resulted. Thus, under extremely high barred owl encounter probabilities, our modeling suggested that even large amounts of area in potential critical habitat networks did not compensate for those barred owl impacts. Thus, in order to identify potential critical habitat areas for the northern spotted owl, we made assumptions about barred owl encounter probabilities in each of the 11 modeling regions. The assumed changes in encounter probabilities we used in Phases 2 and 3 of our modeling were, in most cases, relatively modest changes from the currently estimated encounter probabilities. In fact, for Phase 2 and 3 modeling, we decreased barred owl encounter probabilities in only 3 of 11 modeling regions, and increased encounter probabilities in 8 of 11 modeling regions. Mean absolute value of change (from currently estimated to what we assumed in Phases 2 and 3) among modeling regions was 0.081 (range = 0.005 (in the KLE) to 0.335 (in the OCR)). For additional detail, please see our response to *Comment (38).*

Comment (132): One commenter suggested that we use an occupancy analysis on the long-term demographic study areas rather than modeling habitat with MaxEnt to better address barred owl effects.

Our Response: Barred owl impacts were included in HexSim. In our response to comments made on Appendix C in the Draft Revised Recovery Plan for the Northern Spotted Owl (75 FR 56131; September 15, 2010), the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) addressed the choice we made to use MaxEnt and the full data set of owl site center locations that was available to us, rather than rely solely on data from the Demographic Study Areas.

Comment (133): One commenter contended that a separate analysis of BLM checker-boarded lands in western Oregon is needed in order to understand the performance of northern spotted owl populations under the different habitat networks and composites on those lands.

Our Response: The number of possible owner/district/region-centric analyses that we could have evaluated was nearly infinite. The BLM's ownership was considered in the same way that other ownerships were. In developing the critical habitat designation, we prioritized public lands over private lands.

Comment (134): One commenter noted that for most of the study areas, the estimates from HexSim compared favorably to the empirical estimates from the field studies except for the South Cascades (CAS) and Klamath (KLA) Study Areas. In one case (CAS), the estimate from HexSim was much larger than that from the field studies, and in the other case (KLA) the estimate from HexSim was significantly smaller than from the field studies. These differences and inconsistencies raise some concerns for the validity of the

modeling results from HexSim. The commenter asked for some explanation for these differences and inconsistencies, and whether the input parameters for HexSim need to be revised.

Our Response: We are aware of these differences, as noted in Appendix C of the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011). We evaluated multiple changes to the northern spotted owl HexSim model's settings, but those changes did not result in overall better agreement between HexSim population estimates and empirical estimates from demographic study areas (DSAs). To some extent, this issue is the result of the spatial scale at which we ran the northern spotted owl HexSim model. The overall results, in our view, were quite good—but not in every specific case. Although there were discrepancies at these local areas, we believe that the scale at which we evaluated information for potential critical habitat networks (modeling regions and the entire geographic range of the northern spotted owl in the United States, which is at least an order of magnitude larger than a demographic study area) was appropriate. We provide additional justification in the following paragraphs.

The KLA DSA is quite small, and is distributed across the Klamath East and Klamath West modeling regions. The CAS DSA is large, and is distributed across the Klamath East and East Cascades South modeling regions. There were no simulated northern spotted owl life-history parameters that varied based on demographic study area location. Some demographic data (resource target and home range size) did, however, vary by modeling region.

HexSim simulation data show that the East Cascades South modeling region exchanged owls principally with the Klamath East and West Cascades South modeling regions. The Klamath East modeling region exchanged owls principally with the East Cascades South and Klamath West modeling regions, with relatively small numbers of immigrants coming from the West Cascades South region. The Klamath West modeling region exchanged owls principally with the Klamath East modeling region, with the next highest number of emigrants and immigrants being associated with the Oregon Coast and Redwood Coast regions, respectively.

The simulated CAS DSA population size is roughly 45 owls too large, whereas the KLA DSA population size is about 55 owls too small. These two DSAs are spread across three modeling regions, with both DSAs residing partly in the Klamath East region. Because the Klamath East modeling region exhibits high rates of simulated immigration and emigration with the other two modeling regions in question (see previous paragraph), the discrepancy in simulated DSA population sizes is not a big concern. The sum of the simulated CAS and KLA DSA population sizes is almost exactly equal to the combined field estimates for those two regions. This suggests that HexSim's simulated northern spotted owl population size and distribution is quite accurate at the scale of the DSA for most DSAs, and for these two DSAs in particular, it is similarly accurate, just at a slightly larger spatial scale.

Comment (135): One commenter asked what publication or data set were used for establishing the barred owl influence on northern spotted owl reproduction in the HexSim model.

Our Response: In the northern spotted owl HexSim model we used, barred owls did not have any influence on northern spotted owl reproduction, but did on adult survival. This has been clarified.

Comment (136): Several commenters requested that the Service integrate industry data into the modeling process and that attention be given to the assumptions and limitations of the models and whether or not the assumptions and model outputs have been validated.

Our Response: The modeling process incorporated data sets, expert opinion, and published information from the timber industry. We carefully evaluated the appropriateness of our models, data sets, and assumptions and tested the outputs and products of the modeling effort; we therefore are confident that our process was rigorous and met our objectives. Please see Appendix C of the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) for a discussion of the rigorous testing and cross-validation we conducted on our models, as well as our responses to *Comment (19)* through *Comment (22).*

Comment (137): One commenter raised concerns about leaving out high RHS value habitat on State and private lands in Washington, and provided recommendations of specific areas to include in critical habitat designation.

Our Response: The modeling process that the Service developed to help identify potential critical habitat is most appropriately used to make relative comparisons of alternative scenarios. While we sought to make the models as realistic as possible to achieve meaningful relative comparisons, these modeling tools are not designed to predict specific future outcomes. We are confident in the ability of the modeling routine to rank a set of scenarios from best to worst and provide insights about the degree of difference among them. But population metrics provided by the models are better viewed as relative indices than as predictions. This caution about interpretation of model output is particularly relevant to modeling regions with low amounts of total habitat area, such as in the State of Washington. In the modeling environment, small population sizes tend to lead to high variation in outcomes among iterations. Furthermore, competitive effects of barred owls played a large role in determining population outcomes, especially in Washington where encounter rates between barred owls and northern spotted owls are high.

We used the objectives and criteria in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) to guide our critical habitat proposal. Only after we had a critical habitat network that we considered essential to meet recovery objectives did we impose the secondary criterion of network efficiency. We retested networks after efficiency modifications were made to ensure they were still likely to meet recovery objectives. We included State or private lands only where our modeling results indicated Federal land was insufficient to provide what is essential for recovery.

As described in the section Criteria Used to Identify Critical Habitat, we have included in this designation only those areas occupied at the time of listing that provide the essential physical or biological features, or areas unoccupied at the time of listing that we have determined are otherwise essential to the conservation of the northern spotted owl. We appreciate the commenter's suggestion of additional areas for consideration, and we did evaluate all areas on the basis of RHS throughout the range of the northern spotted owl, including State and private lands in southwest Washington. We have included in this final designation all areas that we have determined are essential to the conservation of the species. A determination that certain areas are not essential should not, however, be interpreted to mean that such areas do not have the potential to contribute to the recovery of the species, and we encourage landowners to participate in other recovery efforts to achieve conservation on their lands (for example, as identified in Recovery Actions 14 and 15 of the Revised Recovery Plan (USFWS 2011)). In addition, we identified some State and

private lands in Washington as essential for the conservation of the northern spotted owl, but all of the private lands and some of the State lands were subsequently excluded under section 4(b)(2) of the Act (see Exclusions). As discussed in our response to *Comment (104),* above, exclusion of areas is not the same as a determination that those areas are not essential; it only reflects the Secretary's determination that the benefits of excluding such areas outweighs the benefits of including them in critical habitat.

Comment (138): One commenter claimed that critical habitat includes nearly all suitable habitat—occupied or not—and was driven by the artificial constraints incorporated into the recovery plan—namely the manipulation of the barred owl interaction model. According to the commenter, absent these artificial constraints, the model would have predicted that none of the alternatives will conserve the species in the face of barred owls, therefore none of the lands wherein there is significant barred owl interaction are ''essential'' for the survival of the species. The commenter further stated that given the significant impact on the human environment by restricting management of the lands within this region, the Service needs to clearly provide the public with an estimation of the scientific reliability of their ability to conserve the northern spotted owl, and this information is critical to weighing the social and economic ramifications of the proposed action.

Our Response: The proposed critical habitat rule did not include ''nearly all suitable habitat'' and our evaluation indicated that the large majority of the proposed designation was occupied at the time of listing and contains the physical and biological features essential to conservation of the species. It also identified other areas essential to the species' conservation, which represent only a small portion of the proposed critical habitat. Contrary to the commenter's assertion, the barred owl impacts used in the population modeling process were similar to or slightly higher than those reported in most modeling regions; barred owl effects were reduced in only three of 11 regions (Table 2 in Modeling Supplement). This was done to enable the identification of areas essential to the spotted owl's recovery; threats that are not habitat-based are addressed through implementation of actions in the recovery plan. The current influence of barred owls on occupancy by northern spotted owls does not negate the role of habitat in the recovery of the species. The Service clearly noted in the proposed rule that the areas proposed as critical habitat are essential, but not sufficient absent other management actions, to recover the northern spotted owl.

Comment (139): One commenter was concerned that the proposed rule did not present an effects analysis for the proposed exclusions that indicates how northern spotted owl populations would likely respond if these lands were excluded.

Our Response: Many of the potential exclusions put forth in the proposed critical habitat rule would be unlikely to affect the outcome of our population modeling. This is because those exclusions, if made, would be based on their having some existing habitat protections (e.g., wilderness areas, national parks, HCPs, SHAs) that we would reasonably expect to continue into the future, and thus our treatment of them in the modeling would be the same as if they were included in a critical habitat network. If we were to exclude lands without consideration of continued conservation, we agree that this could change the results of our population modeling. However, since this is not the case, and no such lands were excluded from this final rule, we did not need to conduct such an analysis in this final rule.

Comment (140): One commenter was critical that no analysis was provided as to the relative effectiveness of the new critical habitat network in also capturing habitat for other late-seral/old-growth-associated species of concern, and encouraged an analysis of the effects of the proposed critical habitat network on multi-species conservation goals, by overlaying critical habitat boundaries on data on occurrence and habitat distribution for other species of concern.

Our Response: Analyzing the effects of the proposed critical habitat network on multi-species conservation goals is beyond the scope of the critical habitat designation process for the northern spotted owl. Furthermore, the results of such an analysis would not affect the selection of the final critical habitat designation for the northern spotted owl, as the statutory language defines critical habitat with reference to a particular listed species.

Comment (141): One commenter suggests that the Service fails to explain to the public why, in order to model sustainable northern spotted owl populations, it was required to arbitrarily select an interaction rate with barred owls that was not based on science-based field studies. Rather, the commenter states, it was based on the assumption that barred owls would be addressed through their extirpation from wide swaths of the Pacific Northwest (''Modeling and Analysis Procedures used to Identify and Evaluate Potential Critical Habitat Networks for the Northern Spotted Owl,'' USFWS Feb. 28, 2012, pp. 14–15), an assumption that is neither legally nor scientifically supportable.

Our Response: The Service made no assumption, written or otherwise, that the barred owl would be extirpated from any portion of the northern spotted owl's range. The ''ceiling'' on barred owl encounter rates that was used in the modeling (Phases 2 and 3 from Dunk *et al.* 2012a) was not arbitrary, but based on the results from several scenarios presented and compared during Phase 1 modeling. As explained in both Appendix C of the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) and Dunk *et al.* 2012b, the barred owl encounter rates used in the testing and selection of the proposed critical habitat designation are, in most modeling regions, similar to or even slightly above the currently estimated encounter rates. Only in portions of Washington were encounter rates reduced in order to identify essential habitat absent the undue influence of barred owls, but certainly not to the extent of ''extirpation of wide swaths'' as suggested in this comment. For additional details, please see our response to *Comment (38).*

Comment (142): One commenter stated that the original critical habitat designations were based on forest stand characteristics whereas the new designations are based on computer simulations that are untested and unreliable, and that this is not an improvement on the existing science. The commenter states that northern spotted owl populations have continued to decline as suitable habitat has increased; therefore, there are factors other than habitat that are decimating northern spotted owls, namely barred owls and catastrophic fires, and increasing the size of habitat will do nothing to save them.

Our Response: While it is true that northern spotted owl populations continue to decline, we have no evidence to suggest that suitable habitat has increased rangewide. Furthermore, we recognize that loss or degradation of habitat is not the only threat affecting northern spotted owl populations. However, as we have stated, comprehensive recovery actions for the northern spotted owl are provided in the Revised Recovery Plan (USFWS 2011). The existence of other, non-habitat based threats does not relieve

the Service of its statutory obligation to designate critical habitat for the species to the maximum extent prudent and determinable.

We believe the commenter may not have understood that the computer programs that we used were developed, to the extent that it was defensible to do so, with empirically derived information, and thus were also ultimately based on real forest stand characteristics. In cases where this was not possible, a rationale for parameter inputs was provided (see Appendix C of the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) and Dunk *et al.* 2012b). For example, actual weather station data are not available across the entire range of the northern spotted owl; however, temperature and precipitation models that provide site-specific climate data across the species' range provide these data. Additional explanation of the extensive degree to which our models were tested and cross-validated is also provided there, as well as in our responses to *Connet (19)* through *Comment (22),* among others.

Comment (143): Several commenters noted that the Service should redo its habitat modeling by including active management as a setback of owl habitat and to determine how long it will take for treated areas to recover to suitable nesting, roosting, and foraging habitat.

Our Response: The analysis suggested in this comment is predicated on the availability of reliable information on the extent to which active management may potentially be implemented within the boundaries of critical habitat, if at all. As we have noted throughout this rule, the discussion of active management provided is for use by Federal, State, local, and private land managers, as well as the public, as they make decisions on the management of forest land under their jurisdictions and through their normal processes. We are attempting to emphasize that critical habitat is not necessarily a ''hands off'' designation, depending on the nature of the habitat and the action under consideration, and we encourage land managers to consider the flexibility of management options available to them consistent with the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) and the Standards and Guidelines of the NWFP (USDA, USDA 1994). However, as noted in our economic analysis of the designation, predicting what land managers may choose to do is an exercise in uncertainty; land managers may choose to refrain from any management actions, may continue to manage lands as they currently do, or make choose to implement alternative active management practices. Given that we do not know whether land managers will even attempt to implement active management, much less how often or on what scale, attempting to model the effects of those actions on RHS would be purely speculative and, for our purposes, uninformative.

Other Public Comments

Comment (144): Two comments were submitted regarding how proposed critical habitat (not specific to a particular land use allocation) will negatively impact future development within counties.

Our Response: The forested areas included in the critical habitat designation are primarily managed for forest products, including timber production. We are not aware of any development projects proposed within the area of this revised designation, and our final economic analysis did not identify any such potential impacts.

Comment (145): Two commenters asserted that the regulatory mechanisms for protecting critical habitat on State and private lands were insufficient to adequately protect northern spotted owl habitat.

Our Response: The statutory authority defining and regulating critical habitat is the Endangered Species Act (Act). Section 7(a)(2) of the Act specifically provides that protections to critical habitat via consultation are triggered by actions authorized, funded, or carried out by Federal agencies (referred to as a ''Federal nexus''). If there is no Federal nexus involved in a proposed action, the law does not require consultation with the Service. The Act does not provide a direct regulatory mechanism for protecting critical habitat on State or private lands absent a Federal nexus.

Comment (146): One commenter requested that the Secretary identify those lands being designated for the purpose of expanding the range or dispersing the northern spotted owl into unoccupied areas.

Our Response: The designated lands are entirely within the range of the northern spotted owl and the vast majority of lands were occupied by northern spotted owls at the time of listing. This designation does not identify any areas for the purpose of expanding the range of the species. We have included some small areas that may have been unoccupied at the time of listing for the purposes of accommodating potential population growth. Each of the subunit descriptions in this rule describes the subset of area, if any, that was identified to assist with northern spotted owl movement across broad landscapes, to provide connectivity between established populations, or to provide for population expansion. Population expansion, as used here, is meant to describe population growth in terms of increased numbers of individuals within an area, not range expansion. In Oregon we have designated two areas specifically to assist in the movement of northern spotted owls between the Oregon coast (ORC) and the western Cascades south (WCS) critical habitat units. In Washington, many historically occupied areas included in critical habitat are currently unoccupied due to reductions in spotted owl populations. Full occupancy of these formerly occupied areas (population growth or expansion) would provide for conservation of the spotted owl without expanding the range. Relative to past critical habitat designations for the spotted owl, we also included additional areas in northern Washington into the current critical habitat designation. These areas may increase the potential for dispersal of owls to and from British Columbia, Canada, in the future. Currently, such exchange is unlikely due to low abundance of spotted owls in this landscape on both sides of the international border. All of this area is within the current geographic range of the northern spotted owl, and does not expand that range beyond its historical boundaries.

Comment (147): One commenter questioned how the Service had applied a ''significant contribution'' standard to occupied and unoccupied areas.

Our Response: We considered a specific area to make a ''significant contribution'' to the conservation of the species if adding or removing that area from the habitat network under consideration resulted in an appreciable change in the population performance in that modeling region.

Comment (148): One commenter requested additional clarification of the terms ''largely occupied'' or ''approximately occupied'' at the time of listing for particular subunit areas.

Our Response: These terms have been clarified in the final rule. For each subunit, the proposed rule explained that the specified percentage ''was covered by verified northern spotted owl home ranges at the time of listing.'' As an example, such subunit descriptions then went on to say: ''[w]hen combined with likely occupancy of suitable habitat and occupancy by nonterritorial owls and dispersing subadults, we consider this subunit to have been largely occupied at the time of listing. In addition, there

may be some smaller areas of younger forest within the habitat mosaic of this subunit that were unoccupied at the time of listing. We have determined that all of the unoccupied and likely occupied areas in this subunit are essential for the conservation of the species to meet the recovery criterion that calls for continued maintenance and recruitment of northern spotted owl habitat. The increase and enhancement of northern spotted owl habitat is necessary to provide for viable populations of northern spotted owls over the long-term by providing for population growth, successful dispersal, and buffering from competition with the barred owl.'' Thus, the specified percentage is based on actual surveys. However, as described in Criteria Used to Identify Critical Habitat, we also determined that all areas designated are essential to the conservation of the northern spotted owl, using the more restrictive standard for unoccupied areas, to ensure all areas were appropriately designated even if there was any uncertainty about its occupancy status at the time of listing.

Comment (149): One commenter requested additional clarification about how the ''time of listing'' occupancy analysis relates to information suggesting that old growth and late-successional habitat features may not be optimal for the northern spotted owl in the Oregon Coast Range.

Our Response: Northern spotted owls live in a variety of forest types and rely on forests of varying structure to survive during different parts of their life cycles. The occupancy data from the time of listing reinforces that the northern spotted owl requires older forest structure to maintain viable reproducing populations throughout much of its range. This commenter appeared to be referring to studies that have shown that northern spotted owls will use younger forests in the Oregon Coast Ranges (Glenn *et al.* 2004) and appear to benefit from some degree of younger forest interspersed in older forest in southwest Oregon (Olson *et al.* 2004) and northern California (Franklin *et al.* 2000). However, none of these studies suggest that old growth and late-successional forest are not optimal habitat for northern spotted owls.

Comment (150): One commenter requested that the Service acknowledge the benefits of grazing on public lands as a tool to manage vegetation which provides the northern spotted owl with easier access to prey. The commenter also expressed concern that the expansion of critical habitat would limit grazing.

Our Response: We are not aware of any research or scientific publications on grazing and northern spotted owl foraging use, and the commenter did not provide supporting information. In any case, this rule does not prescribe limitations on grazing.

Comment (151): One commenter requested that regeneration harvest be restored on all Federal forests within the Northwest Forest Plan boundary, in particular on the Olympic Peninsula. The commenter suggested that regeneration harvest would help restore forest health, create jobs, provide revenue from timber harvest, and reduce effects of forest fires on northern spotted owl habitat.

Our Response: This rule is limited to the designation of critical habitat for the northern spotted owl. While the preamble discusses some management techniques for consideration by land managers, specific management prescriptions for Federal lands within the NWFP is beyond the scope of this rulemaking.

Comment (152): Several commenters suggested narrowing the scale at which the Service assesses whether a proposed action destroys or adversely modifies critical habitat to better reflect northern spotted owl biology, to better capture localized negative trends, or to align with the intent of the Endangered Species Act.

Our Response: In accordance with Service policy, the adverse modification determination is made at the scale of the entire designated critical habitat, unless the critical habitat rule identifies another basis for the analysis (USFWS and NMFS 1998). The adverse modification determination for the northern spotted owl will occur at the scale of the entire designated critical habitat, as described above in the section Determinations of Adverse Effects and Application of the ''Adverse Modification'' Standard, with consideration given to the importance of the conservation function of units and subunits within each of the recovery units identified in the Revised Recovery Plan (USFWS 2011, Recovery Criterion 2). The Service believes the entire designated critical habitat is the appropriate scale for this analysis, because our determination is based on whether implementation of the Federal action would preclude the critical habitat as a whole from serving its intended conservation function or purpose. However, a proposed action that compromises the ability of a subunit or unit to fulfill its intended conservation function or purpose could represent an appreciable reduction in the conservation value of the entire designated critical habitat.

Comment (153): Several commenters suggested that the Service cannot legally designate land as critical habitat that does not currently contain primary constituent elements (PCEs), and should not designate lands that may become habitat in the future.

Our Response: In our proposed designation of critical habitat for the northern spotted owl, we identified primarily areas that were occupied at the time of listing as critical habitat; all such areas support the PCEs and subsequently the essential physical or biological features as identified in this rule. In addition, some areas that may not have been occupied at the time of listing are designated as critical habitat, because we determined that such areas are essential to the conservation of the species. These areas make up a relatively small percentage of the total designation. Because the loss or degradation of habitat was one of the primary threats that led to the listing of the species, the restoration of habitat is required to achieve the recovery of the species, as identified in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011). In some areas, the recovery goal of achieving viable populations across the range of the owl cannot be achieved without the development of some areas that are presently younger forest into additional habitat capable of supporting northern spotted owl populations into the future.

We evaluated all areas anticipated to develop into suitable habitat in the future as if they were unoccupied at the time of listing, to determine whether such areas are essential to the conservation of the species. We included such areas in the final designation of critical habitat only if they were essential to the conservation of the species because they provide connectivity between occupied areas, room for population expansion or growth, or the ability to provide sufficient suitable habitat on the landscape for owls in the face of natural disturbance regimes, such as fire. In addition, recent research indicates that northern spotted owls require additional habitat area to persist in the face of competition with barred owls. Finally, in some areas where habitat loss or degradation was historically severe, areas of currently degraded habitat may be in need of restoration to provide the large, contiguous areas of nesting, roosting and foraging habitat required by the species. Section 3(5)(A)(ii) of the Act provides for the designation of critical habitat in specific areas outside the geographical area occupied at listing

upon a determination that such areas are essential for the conservation of the species. As the Secretary has determined that these areas of younger forest that may have been unoccupied at the time of listing are essential to the conservation of the species, the law provides for their designation as critical habitat.

Economic Analysis Comments

Comments From States

Comment (154): The California Department of Forestry and Fire Protection (CALFIRE) states that the designation of Jackson Demonstration State Forest land as critical habitat could result in costly section 7 consultations that might prohibit or delay the approval or implementation of environmental restoration projects. It identifies water quality permits under the Clean Water Act for timber harvesting plans as a potential future nexus, while noting that currently, a waiver of waste discharge requirements can be applied to discharges related to timber harvest activities on non-Federal lands in the North Coast Region. It identifies current litigation threatening this exemption.

Our Response: Chapter 5 of the Final Economic Analysis (FEA) provides extensive discussion of the potential Federal nexuses necessitating section 7 consultation on State and private lands (paragraphs 209 through 221). Specifically, it discusses the Clean Water Act (CWA) permitting requirements and a recent ruling by the Ninth Circuit that has the potential to increase permitting requirements for silviculture operations as sources of point-source pollution. *Northwest Environmental Defense Ctr.* v. *Brown,* 640 F.3d 1063 (9th Cir.). However, in light of the fact the United States Supreme Court has granted a *writ of certiorari* to review this ruling, the economic analysis concludes that considerable uncertainty surrounds this litigation and whether it will in fact change the permitting requirements for silvicultural operations within the next 20 years. Due to this uncertainty, we assume for purposes of our economic analysis the current CWA exemption and subsequent lack of a Federal nexus continues, and therefore do not anticipate direct effects on private or State lands associated with Clean Water Act permitting activities, and therefore do not anticipate any significant impacts to the restoration projects resulting from the designation of critical habitat. Please see the discussion of the Jackson Demonstration State Forest in the section Changes from the Proposed Rule for more details.

Comment (155): CALFIRE provides additional information describing the current management of the Jackson Demonstration State Forest and northern spotted owl habitat.

Our Response: We have added additional discussion of baseline practices at Jackson Demonstration State Forest to Chapter 5 of the FEA.

Comments From Federal Land Managers

Comment (156): U.S. Bureau of Land Management (BLM) asked for clarification as to how the DEA used the data provided by their agency.

Our Response: The BLM provided more detailed geospatial data than other agencies; therefore, when BLM data are aligned with the Service data layers and USFS historical and projected timber harvest, the analysis endeavors to utilize a consistent data set across land ownership types. For example, while BLM provided data on 30 years of planned timber harvest, as well as stand age (i.e., over and under 80 years of age), the analysis focuses on timber harvest projections for the first decade to derive a 20-year projection and does not incorporate stand age, because this information was not available for other areas. Specifically, the draft economic analysis (DEA) used a filtering approach to identify those specific areas where incremental timber harvest effects may occur. Further explanatory detail on these methods has been added to Chapter 4 of the final economic analysis (FEA).

Comment (157): The BLM requested further clarification on how the Service considered the effects on long-term, sustained-yield timber production due to the shift in management objectives for the Matrix lands that are proposed to be designated as critical habitat.

Our Response: The DEA and FEA state that the obligation of the agencies is to consult with the Service to ensure that their actions are not likely to destroy or adversely modify critical habitat and may opt from a wide range of management options, consistent with their land use plans and statutory authorities. It is challenging to predict how the land management agencies will respond or on what actions they will consult. Therefore, there is considerable uncertainty regarding long-term effects, if any, on sustained yield timber production due to a potential shift in management objectives within the revised critical habitat designation. A range of potential effects are discussed qualitatively in the analysis.

Comment (158): The U.S. Forest Service questioned the DEA assumption about the distribution of timber harvested from Federal lands, and stated that the average estimated annual yield per acre may understate actual timber harvest, as well as the assumption that USFS harvest projections include only thinning activities and do not anticipate future regeneration harvest activities.

Our Response: In an ideal world, the economic analysis would utilize detailed geospatial data showing when and where Federal timber harvest is projected to occur. However, lacking data on the narrowly defined areas where timber harvest is projected to occur, and where critical habitat may have an incremental effect on these harvests, the analysis broadly applies projected timber harvest across all Federal land acres. Using this approach, the DEA used timber harvest projections ranging from 14 to more than 200 bf per acre per year across critical habitat subunits, as described in Chapter 4 of the DEA (IEC 2012a, p. 4–18). The DEA based FS Region 6 projections on historical timber harvest quantities provided by USFS. Therefore, planned changes to timber harvest were not contemplated. To address this uncertainty in the amount of timber that could potentially be harvested in the future (i.e., if changes to timber harvest should occur), the FEA scales existing baseline projections upward to account for a potential 20-percent increase in timber harvest projection on USFS lands. The FEA also revised the language regarding projected timber activities to clarify that they may include both thinning and regeneration harvest.

Comment (159): The U.S. Forest Service stated that the DEA assumption about the distribution of timber harvested from Federal lands is problematic and that the average estimated yield of 63 BF per acre per year may understate actual timber harvest. In Region 6, the FY 2013 and FY 2013 NWFP timber program is expected to increase by 20 percent in terms of acres and volume. USFS also disagrees with the assumption that ''USFS harvest projections include only thinning activities and do not anticipate future regeneration harvest activities (page 4–18).''

Our Response: In the Final Economic Analysis, we rely on data provided by USFS Region 5 and Region 6 to estimate annual projected timber harvest amounts. Each region provided an annualized projection of future timber harvest (Region 5) or a 5-year historical annual average timber harvest (Region 6) by national forest. Using GIS acreage data for each national forest, we calculate an average annual timber

harvest yield in BF/acre/year. We then estimate a baseline average annual timber harvest yield for each critical habitat subunit based on the number of acres and the proportion of the subunit within each national forest.

To estimate potential incremental economic impacts of the proposed critical habitat designation, we focused on matrix lands that are likely to be unoccupied by the northern spotted owl. We did not estimate that there will be incremental economic impacts across the entire proposed critical habitat, so the comparison to the USFS expected harvest for the entire National Forest System across the entire range of the northern spotted owl is inappropriate. There are approximately 9.5 million acres of USFS lands in the proposed critical habitat. Of these, 6.9 million acres are reserves and 2.6 million are matrix lands. Of the matrix lands, approximately 1.1 million acres are predominantly younger forests (considered to be unoccupied) and 1.6 million acres are northern spotted owl habitat. Furthermore, we estimate that approximately 6.5 percent of northern spotted owl habitat is likely to be unoccupied. We find that incremental economic impacts to USFS timber harvest are relatively more likely in unoccupied matrix lands or approximately 1,158,314 acres of 2,629,031 total acres of all USFS matrix lands.

For example, in USFS Region 5, there are approximately 956,000 acres of matrix lands. The data provided by Region 5 suggest that the annualized projected timber harvest in these matrix lands is 105.4 MMBF (as noted in the comment). However, we estimate that incremental economic impacts due to the critical habitat designation would be relatively more likely to occur in unoccupied areas. We presume that there will not be incremental impacts to timber harvest due to critical habitat in occupied areas as these areas are already sufficiently managed for NSO conservation in the baseline. In Region 5, there are approximately 502,500 acres of matrix lands that are likely to be unoccupied (100 percent of predominantly younger forests and 6.5 percent of northern spotted owl habitat). Thus our area of potential impact is smaller than that contemplated in the comment. Our estimate of baseline timber yield within these areas, however, is consistent with those presented in the comment and FS data. Specifically, the annualized projected timber harvest in these unoccupied matrix lands is 55.5 MMBF. Therefore, when we contemplate a 20 percent reduction in timber harvest due to critical habitat in matrix lands that may potentially experience incremental impacts, we calculate a reduction of approximately 11.1 MMBF (20 percent of 55.5 MMBF), versus a reduction of 21.1 MMBF (20 percent of 105.4 MMBF). In sum, our baseline timber yield and harvest projections are consistent with the USFS data cited in the comment; we are simply assessing impacts on a more constrained set of acres where incremental impacts are relatively more likely to occur.

Note also that the DEA based USFS Region 6 projections on historical timber harvest quantities provided by USFS. Therefore, planned changes to timber harvest were not contemplated. To address this uncertainty, the FEA scales existing baseline projections upward to account for a potential 20 percent increase in timber harvest projection on USFS lands. The FEA also revises the language regarding projected timber activities to clarify that they may include both thinning and regeneration harvest. However, this does not materially affect the results of the analysis.

Finally, we note that our estimate of the area of younger forest in the matrix where incremental impacts may occur is most likely an overestimate. As stated above, we estimated that of the matrix lands, approximately 1.1 million acres are predominantly younger forests (considered to be unoccupied). This estimate, however, was based on the total area of younger forest in the matrix within the proposed designation regardless of patch size. As we noted in our incremental effects memorandum (IEC 2012b, p. B–7), it would be unusual for an agency to contemplate a timber sale or other activity on a very small patch of younger forest; based on our experience, we assumed roughly 40 ac (16 ha) as the minimum patch size of younger forest on which we would anticipate potential incremental impacts. As the estimate of younger forest within the matrix used in the economic analysis did not screen out patches less than 40 ac (16 ha) in size, the resulting total of 1.1 million acres is likely an overestimate of the area of younger forest where incremental impacts may occur on matrix lands. In addition, the final designation represents a net reduction of matrix lands where economic impacts are relatively more likely to occur and this reduction was not analyzed in the FEA (see Changes from the Proposed Rule). It is also important to note that, even if there were likely to be higher economic impacts, we would not exclude these lands from designation under section 4(b)(2) because a critical habitat designation in these areas will likely have regulatory benefits in conserving this essential habitat.

Comment (160): The USFS suggested that additional person-hours for consultations to consider critical habitat issues may be higher than described in the DEA.

Our Response: The USFS currently plans projects outside of existing critical habitat that may be included in the revised critical habitat. Therefore, the administrative burden may include additional consultations beyond the additional hours contemplated for consultations that would already occur absent critical habitat. The FEA makes note of this potential incremental increase in administrative burden.

Comments on the Economic Analysis From the Public

Comment (161): One submission noted that the proposed rule does not make clear the specific restrictions imposed on designated private lands. Furthermore, many submissions note that the resulting regulatory uncertainty will likely reduce the market value of designated private lands, contributing to the loss of multiple-use, working forests that provide other valuable types of habitat and jobs, or result in timber management practices designed to ensure private lands do not become northern spotted owl habitat. Potential third-party litigation risk also contributes to this uncertainty.

Our Response: The proposed rule provided a detailed description of the protection provided to areas designated as critical habitat (see 77 FR 14081; March 8, 2012). Specifically, section 7 of the Act requires that Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. Chapter 5 of the DEA provided explicit discussion of the potential for State and private landowners to request Federal permits, thereby necessitating consultation under section 7. Furthermore, the chapter acknowledged the concerns raised in the comments regarding the potential impact of regulatory uncertainty on the market value of private lands, including potential changes in State regulations in response to the designation and changes in private timber harvest practices resulting from greater perceived investment risk, and discusses the existing data limitations preventing estimation of the monetary value of such impacts (see DEA paragraphs 259 through 281). Additional information provided through public comment and

supporting the existing analysis has been added to Chapter 5 of the FEA.

All private lands have been excluded from this final designation of critical habitat for the northern spotted owl (see Exclusions).

Comment (162): One submission states that all private and State lands in Washington are already subject to State and Federal regulations providing protection for the northern spotted owl; therefore, designating these lands results in duplicative regulation that is contrary to Executive Order 13563 and the President's memorandum dated February 28, 2012. An additional submission recommends that the Service rely instead on existing State regulations and cooperative approaches.

Our Response: The Service is required under the Act to designate critical habitat to the maximum extent prudent and determinable for listed species regardless of State laws. This process is separate from and additional to the listing of a species under the Act and is specifically needed for the northern spotted owl because habitat loss is one of the primary threats to its conservation. The requirement to designate critical habitat is not replaced by State regulations or classification of lands. Please note that, as discussed in our section on Exclusions, above, we were able to exclude all private lands proposed as critical habitat in the State of Washington and California.

Comment (163): One submission questions the DEA's estimate that 117,628 ac (47,602 ha) in Washington may be subject to incremental effects, noting that the calculation is unclear. The comment suggests the correct acreage is 133,895 ac (53,558 ha). Furthermore, two submissions express concern that the State could change the definition of suitable habitat to include all designated private lands, implying the potential increased regulatory burden identified in the DEA may be understated.

Our Response: As noted in Exhibit 5–6 of the DEA, area calculations in the DEA were based on the GIS data layers provided by the Service to the economists preparing the DEA on March 1, 2012. The area estimates derived from these data layers differ slightly from those provided in the proposed rule due to minor boundary adjustments under consideration by the Service. A total of 178,147 ac (72,094 ha) of private land in Washington were proposed for designation, of which 60,519 (24,491 ha) were subject to existing or proposed conservation plans, leaving 117,628 ac (47,602 ha) that may be subject to indirect impacts. As discussed in detail in paragraphs 227 through 235 of the DEA, interviews with Washington State regulators revealed that even if all private lands were designated and subsequently defined by the State as suitable habitat, the State would defer to approved habitat conservation plans (HCPs) or Safe Harbor Agreements (SHAs). Thus, indirect incremental impacts for 60,519 ac (24,491 ha) are unlikely. Of the remaining 117,628 ac (47,602 ha), much of this area may already fall within mapped Home Range Circles for the northern spotted owl and thus are already considered to be suitable habitat. Finally, whether the State will make any changes to its regulations is highly uncertain. However, as all private lands in the State of Washington have been excluded under section 4(b)(2) of the Act (see Exclusions), the concerns expressed by the commenter are moot.

Comment (164): One submission states that the DEA does not account for additional, unforeseen regulatory costs and project delays associated with the regulation of critical habitat by California State agencies.

Our Response: Chapter 5 of the DEA provides a detailed account of our discussions with the California Department of Forestry and Fire Protection (CALFIRE) to understand whether the State would regulate harvests on private timberlands differently if those lands are federally designated critical habitat (see paragraphs 246 through 257). Given the extensive baseline protections provided by California's Forest Practice Rules and the California Environmental Quality Act, CALFIRE does not anticipate any changes as a result of the designation.

Comment (165): Two submissions note that private landowners obtain Federal funding for forest health improvements, fire resiliency projects, and watercourse restoration. Access to these funds may be restricted or delayed because of the designation, resulting in decreased incentives for landowners to complete such projects.

Our Response: As all private lands have been excluded from this final designation of critical habitat for the northern spotted owl, the concerns expressed by these commenters are no longer relevant.

Comment (166): One private landowner stated that the economic impacts of the northern spotted owl listing and protection prior to critical habitat designation are relevant considerations in the exclusion process.

Our Response: Section 4(b)(1)(A) of the Act provides that the listing of a species is determined based solely on the basis of the best scientific and commercial data available. However, under section 4(b)(2) of the Act, the Service may consider economic impacts, and other relevant impacts of designating a specific area as critical habitat. Therefore, when designating critical habitat and evaluating specific areas under section 4(b)(2) of the Act for potential exclusion, we consider the incremental impacts of critical habitat designation, above the ''baseline'' conservation measures resulting from listed status. These incremental impacts (economic or other factors) are then evaluated relative to the conservation benefit of including the specific area in the critical habitat designation. If the costs outweigh the benefits, then the Secretary may exercise his discretion to exclude the area, provided that the exclusion does not result in the extinction of the species.

Comment (167): One submission takes issue with the DEA's conclusion that the approval of HCPs and reinitiation of consultations on existing HCPs will result only in minor administrative burden. Interpretive disputes around the adverse modification of critical habitat can readily lead to costly delays, litigation, and pressure to modify existing and proposed HCPs as well as other projects. Critical habitat designations on private lands discourage the development of HCPs and take away stability over long-term investment horizons.

Our Response: The reinitiation of consultation on an existing HCP is the responsibility of the Service and requires the formulation and addition of an adverse modification analysis. Those consultations that already include an effects determination and no jeopardy determination for northern spotted owls will have incorporated an analysis of the effects of the action (the HCP) on northern spotted owl habitat, which will be similar to the adverse modification analysis except that additional analysis could be needed on impacts to the conservation function of the critical habitat subunit. Only where an HCP would be anticipated to cause adverse modification of a newly designated critical habitat network would significant modification likely be necessary, and we have not found any HCPs that fall into this category for this designation. As for HCPs that are under development the need to minimize impacts to northern spotted owl habitat in an effort to minimize impacts to northern spotted owls is likely to suffice to bring the impacts below the threshold of destruction or adverse modification, thereby reducing the time and energy necessary to complete an HCP as indicated in the Economic Analysis. We note that we have excluded all lands

covered by an HCP pursuant to section 4(b)(2).

Comment (168): Several comments provided additional information on the relationship between the amount of private forestland available for harvest and employment. The three comment letters refer to the results of a recent study prepared by Forest2Market on the economic contribution of forestry-related industries to Washington State's economy. They state that for every 1,000 ac (400 ha) of private forestland in Washington, there are 5 jobs in forestry-related industries (or 11 to 15 jobs including indirect and induced employment), an associated $224,000 to $233,000 in wages (or $495,000 to $631,000 including indirect and induced employment), and up to $30,000 in taxes and fees annually. The commenters then use these relationships to estimate the total number of jobs supported by private working forestland proposed for critical habitat designation.

They conclude that if private acres in Washington are designated as critical habitat, all of these jobs, and the associated wages, taxes, and fees, will be lost. In other words, a total of 1,650 jobs, $74.3 million in annual wages, and $4.5 million in annual taxes and fees to counties will be lost. If the Washington multipliers are extended to all 1.3 million private acres proposed in Washington and California, more than 19,000 jobs could be affected. A separate comment states that for every 1,000 ac (400 ha) of private working forestland in California taken out of production, 12 jobs are lost. Using the resultant multiplier of 0.012 jobs per acre, the comment states that the 1.27 million ac (514,000 ha) of private land proposed for critical habitat designation in California represents more than 15,000 jobs.

Our Response: The comments assume the designation of critical habitat precludes any timber harvests on private lands (i.e., all employment associated with designated acres will be lost). Chapter 5 of the economic analysis examines the potential for harvests to be precluded on private lands and concludes that existing baseline protections in the form of habitat conservation plans (HCPs) and Safe Harbor Agreements (SHAs) are likely to provide sufficient protection to much of the habitat without additional restrictions (see paragraphs 211 and 212 of the DEA). We note that all private landowners with HCPS or SHAs that were proposed for exclusion from critical habitat in the proposed rule were excluded from the final designation. In addition, private landowners of small woodlots in Washington were removed from critical habitat upon a determination that their lands either do not provide the PCEs or are not essential to the conservation of the species. Finally, the remaining 307,308 ac (124,364 ha) of private lands in the proposed designation in California and Washington, which we identified as possibly subject to incremental changes in harvests as a result of the indirect effects of critical habitat designation should a Federal nexus exist, have been excluded from the final designation (see Exclusions). However, here we explain how we derived our estimates of the relationship between private timberland, harvest levels, and employment in the economic analysis.

On some private lands, uncertainty on the part of landowners over whether the designation will result in future restrictions may create an incentive for those landowners to shorten harvest rotations, cutting timber earlier than is financially optimal (see paragraphs 263 through 269 of the FEA). We did not anticipate that private landowners will be precluded from harvesting timber as a result of the designation; rather, we assumed they may harvest earlier than they would have absent the designation. As a result, the estimates noted in the comment of lost employment and associated wages, fees, and revenues anticipated in the comments are likely overstated.

In Washington, 21,715 ac (8,788 ha) of private land in the proposed designation are identified by the State as suitable habitat for the northern spotted owl, but are not currently designated as ''critical habitat state.'' It is possible that the State may reclassify these areas as ''critical habitat state'' in response to the Federal designation, which would impose significant administrative costs on landowners, such that landowners would likely forego future harvests. However, such a regulatory change on the part of the State is uncertain (see complete discussion in paragraphs 231 through 235, 269, and 276 through 279 of the FEA). These private lands are not included in the final designation, as the result of either refinements to critical habitat (determinations that small private landholdings either do not contain the PCEs, or are not essential to the conservation of the species) or exclusions under section 4(b)(2) of the Act.

Thus, the DEA estimated that at worst, it is possible that 21,715 ac (8,788 ha) in Washington may not be harvested, or approximately 1,086 ac (439 ha) per year over the 20-year timeframe of our analysis. Estimating the impact of such a small change in harvestable acres on employment is difficult and likely to be highly dependent on the location and timing of the foregone harvests. The relationships between acres and jobs, revenues, or fees and taxes presented in the comments may not be applicable to such small, marginal changes in harvestable acres.

For example, the ratio of 5 jobs for every 1,000 ac (400 ha) likely represents the average jobs created per acre when total acres of forestland are divided by total timber employment in the State (the Forest2Market report is not clear about whether its ratios represent average or marginal changes). A marginal estimate, on the other hand, would look at the number of jobs associated with the ''next'' 1,000 acres of harvest given existing employment levels and harvestable acres, as the relationship between jobs and acres may not be perfectly linear. Employment associated with the next 1,000 acres of harvest may be larger or smaller than the average. Furthermore, it is possible that other private acres may be harvested as substitutes for the 21,715 ac (8,788 ha) that could be restricted if the State changes its regulations, diminishing the rule's effect on employment. Thus, even if we knew with certainty that the State of Washington will change its regulations as a result of the designation, forecasting potential changes in employment is challenging given existing data limitations.

Comment (169): One comment states that the SDS Lumber Company is the only remaining mill in Klickitat County, and that designating approximately 29,000 ac (11,700 ha) of private forest in Klickitat and Skamania Counties, including approximately 16,000 ac (6,500 ha) of SDS and Broughton Lumber Company land, will have direct and significant impacts on its 300 employees.

Our Response: SDS and Broughton Lumber Company have developed a Safe Harbor Agreement in collaboration with the Service. As described in the Exclusions section of this document, SDS lands within the proposed critical habitat covered by this SHA have been excluded from the final designation.

Comment (170): One comment states that Rayonier (a forest products company) already protects 100 of the 540 ac (40 of the 220 ha) of its land in Washington proposed for critical habitat, making the remaining 440 ac (180 ha) especially important to Rayonier, local communities, and the people who work in forest industry. A reduction in logging on these 440 ac

(180 ha) would directly reduce logging and trucking jobs and have downstream effects in the community.

Our Response: We determined that the lands owned by Rayonier did not meet our definition of critical habitat, therefore these lands are not included in our final designation (see *Comment (106)).* Therefore, we do not anticipate any potential impact of critical habitat in terms of possible reduced harvests on Rayonier lands or effects on local employment due to this rulemaking.

Comment (171): One comment noted that the ''checkerboard'' and intermingled Federal and private ownership patterns make it difficult, if not impossible, for many timberland owners to haul their timber products without the use of some type of Federal road use permit. Access to existing or new roads may be precluded by critical habitat concerns.

Our Response: This issue is addressed in Chapter 5 (p. 5–6) of the FEA. The report notes that a review of Federal consultations over the last 3 years indicates that no consultations related to the northern spotted owl have resulted from application for this type of permit. Representatives of the USFS and BLM further noted that formal consultation of this type of activity is not prioritized, and that any request for consultation would likely be limited to hauling activity and would not include the timber harvest activity itself. As a result, we do not anticipate any direct effects on State or private lands as a result of this potential nexus.

Comment (172): One comment notes that the DEA does not address potential affects to the U.S. Treasury and Federal job losses.

Our Response: Project modification costs quantified in the DEA result from changes in the quantity of timber harvested on Federal lands. As discussed in detail in Chapter 4 of the DEA, section 7 consultations on the sale of timber from Federal lands may result in an increase, decrease, or no change in harvest levels, based on several plausible assumptions. The direct cost (or benefit) of these section 7 project modifications is a loss (or gain) in Federal revenues collected by the U.S. Forest Service and the U.S. Bureau of Land Management resulting from the associated timber sales. Stumpage values related to these effects are summarized in Exhibit ES–4 of the DEA. With available data, we are unable to discern how these timber harvest changes may affect employment at Federal agencies.

Comment (173): One commenter suggested that the DEA fails to comply with the requirements of Executive Order 12866, which requires the Secretary to base his decision on the best reasonably available economic information, and circular A–4, which provides guidance for complying with Executive Order 12866. The commenter states that the DEA applies different standards of information and analysis in its assessment of the effect of the proposed rule on timber production and its assessment of other important ancillary benefits of the designation, as well as the baseline applied in the analysis.

Our Response: An assessment of ancillary benefits is not possible without first assessing the effect of the proposed rule on timber production; the ancillary benefits derive from changes in timber management practices. Therefore, accurately assessing changes in timber production is critical for multiple facets of the economic analysis. The results of this assessment suggest that incremental changes in annual harvests are likely to be small, less than one percent of total harvests in the 56 counties overlapping the designation. While quantification of the value of foregone timber (or timber brought back into production as a result of the regulation) is relatively straightforward, because market data provide an indication of the value of this resource, estimating the marginal changes in terms of the distributional impacts on communities of these small changes in harvests, or the marginal changes in ecosystem services, is challenging and requires significantly more data and sophisticated modeling tools. Thus, both are discussed qualitatively in the FEA.

Regarding the assessment of ancillary benefits, Circular A–4 states, ''You should begin by considering and perhaps listing the possible ancillary benefits and countervailing risks. However, highly speculative or minor consequences may not be worth further formal analysis. Analytic priority should be given to those ancillary benefits and countervailing risks that are important enough to potentially change the rank ordering of the main alternatives of the analysis'' (Circular A–4, p. 26). This text provides some discretion to the Agency to determine whether the quantification of ancillary benefits is necessary. As described in responses to earlier comments, the application of best available data and tools to estimate the incremental changes in ecosystem services resulting from the designation of critical habitat would require significant effort and some data that do not currently exist. Because the Service has not excluded areas where such benefits are possible (i.e., Federal matrix lands), quantification of ancillary benefits would not change the regulatory outcome.

With regard to baseline definition, the comment suggests the analysis should incorporate potential future changes in timber markets, changes in external factors affecting costs and benefits, changes in future regulations, and likely future compliance with other regulations. With regard to future demand for timber, the analysis relies on the best available data provided by the USFS and BLM regarding baseline harvest levels (see FEA paragraphs 166 through 175). Data to predict future changes in the demand of timber products are highly speculative, given current economic conditions (e.g., demand for timber is largely driven by the housing market). We have no reason to anticipate other regulatory changes that would affect the designation of critical habitat, and the comment provides no additional information on this topic. Finally, we consider the degree of compliance with section 7 of the Act in the absence of critical habitat in determining the likelihood of future consultations (see, for example, the discussion in paragraphs 181 through 186 of the FEA).

Comment (174): One comment claims that the DEA distorts the impacts of the proposed critical habitat designation on Douglas County by including ''metropolitan areas that have little to no critical habitat nor similarities to Douglas County's social and economic environment.''

Our Response: Chapter 6 of the DEA provided a detailed socioeconomic profile of each of the 23 counties (including Douglas County) containing proposed critical habitat subunits with higher proportions of Federal forests that are relatively more likely to experience incremental impacts due to the designation of critical habitat. The analysis presents data on the percent change in timber production between 1990 and 2010 for each county, and on the percent growth of annual industry employment between 1989 and 2009 for each county. In addition, the analysis presents data on Federal land payments to each of the 23 counties as a percent of the total local government revenue in FY 2009, demonstrating the relative importance of these funds to each county's budget. The analysis then concludes that five counties (including Douglas County) may be more sensitive to additional incremental changes in timber harvests, industry employment, and Federal land payments. Such data are not readily available at a sub-county level. We believe, however, the

information provides sufficient context for understanding relative economic circumstances across the designation.

Comment (175): One comment states that designating O&C lands as critical habitat is inconsistent and in direct conflict with the statutory provisions of the O&C Act and Sec. 701(b) of FLPMA (Federal Lands Policy management Act). (''O&C lands'' refers to certain areas in western Oregon established under the O&C Act of 1937, and ''O&C'' counties represent those counties containing O&C lands). The Association of O&C Counties asserts that the proposed critical habitat designation will prevent 18 O&C counties from receiving sufficient revenues on a sustainable basis as required by the O&C Act, and will result in employment and income impacts on a local and regional scale.

Our Response: The designation of critical habitat is not a land use allocation. Under section 7(a)(2) of the Act, each Federal agency must insure that any action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of the designated critical habitat of the species. 16 U.S.C. 1536(a)(2). To help action agencies comply with this provision, section 7 of the Act and the implementing regulations set out a detailed consultation process for determining the impacts of a proposed activity on species listed as threatened or endangered, or its designated critical habitat. 16 U.S.C. 1536; 50 CFR Part 402. In *Seattle Audubon Society* v. *Lyons* (''Lyons''), 871 F. Supp. 1291 (W.D. Wash. 1994), the district court held that ''the O & [C Act] does not allow the BLM to avoid its conservation duties under NEPA or ESA * * *'' Id. at 1314. The critical habitat designation does not preclude the sustained yield timber management of O&C lands consistent with the above requirements of the Act. The economic impact to local counties of this critical habitat designation will be determined by the timber management direction the Federal land managers take within critical habitat lands. We believe the ecological forestry techniques discussed in this designation could allow for timber harvest that is consistent with critical habitat objectives and section 7(a)(2), thereby providing increased revenues to affected counties. The Service encourages land managers to consider use of this type of forest management in critical habitat where appropriate.

As discussed in detail in Chapters 3 and 6 of the FEA, the O&C counties currently elect to receive Secure Rural Schools and Community Self-Determination Act (SRS) rather than revenue-sharing payments from BLM under the O&C Act. These payments are supplemented by Payments in Lieu of Taxes (PILT) (see paragraphs 128 through 130 of the FEA). Even absent the designation of critical habitat, the magnitude of future payments under these programs is highly uncertain given that these Federal programs have not been reauthorized (i.e., SRS) or funded (i.e., PILT) by Congress. If SRS and PILT payments continue, the changes in harvests on BLM lands will have minimal to no effect on payments, because SRS and PILT are not directly linked to harvest levels. However, if Congress decides to reduce or end payments under SRS and PILT, counties will shift back to receiving revenue-sharing payments under the O&C Act, and changes in timber harvests on BLM lands will affect the size of these payments. Importantly, we note that under the third scenario analyzed in the DEA, the potential decrease in harvest from BLM lands represents approximately 2 percent of total harvests from BLM lands in these counties (Based on BLM transaction data over the last four quarters (2011Q4–2012Q3) viewed at *http://www.blm.gov/or/resources/forests/blm-timber-data.php*). Thus, if affected, impacts to revenue payments resulting from the designation are likely to be small.

Comment (176): One commenter states increased timber production often has been associated with deteriorating indicators of socio-economic well-being in nearby rural communities, including income, percent living in poverty, and housing conditions, and noted a positive relationship between the health of local economies and the presence of unlogged Federal forests.

Our Response: The comment cites extensively from a report by the National Resources Council (NRC) (NRC 2000). The committee was asked to evaluate the nature of possible economic and social costs and benefits of alternative forest management practices. The committee wrote, ''[a]lthough the question is easy to ask, it is hard to answer. Few social-impact studies clearly tie social and economic outcomes with specific forest-management practices, such as old-growth harvest rates, the use of clearcutting as a harvest technique, or the relative intensity of silvicultural practices'' (p. 163). The committee went on to review a meta-analysis of the relationship between varying levels of timber dependence and measures of community well-being, which finds for most relationships that ''well-being went up as timber dependency went down'' (p. 163). Furthermore, the committee cited studies suggesting that ''wilderness and amenity protection can have a positive influence on certain measures of community well-being, although in-migration brings its own difficulties'' (NRC 2000, p. 164).

The NRC report concluded, ''[d]iverse economic conditions create diverse opportunities and thus temper the effects of timber industry fluctuations on local communities'' (p. 165). It went on to note that ''[a]s the importance of extractive industry declines, the Pacific Northwest communities are looking toward tourism as a way to bolster their economies * * * However, tourism by itself is not a substitute for timber industry jobs'' (NRC 2000, p. 167).

In summary, the NRC report suggests that economically diverse communities are better off than communities that are highly dependent on the timber industry, and preserving wilderness can attract new economic activity to communities. We have added text summarizing the NRC findings in the FEA. However, the designation of critical habitat does not preserve wilderness. Furthermore reducing timber harvests does not guarantee that other sources of economic activity, such as tourism or in-migration by wealthy, highly educated individuals, will generate enough new economic activity to replace lost timber-related jobs and wages. Finally, the designation is likely to reduce or increase annual timber harvests from Federal lands by less than one percent. Thus, any changes in economic diversity resulting from the rule are likely to be difficult to measure.

Comment (177): One comment suggests that the proposed critical habitat designation will create a regulatory hurdle that will impede the construction of vital infrastructure projects (roads, bridges, power lines, and other utilities).

Our Response: Chapter 7 of the DEA discusses the potential economic impacts to road and bridge construction and maintenance, and installation and maintenance of power transmission lines and other utility pipelines. The analysis concludes that all potential conservation efforts associated with linear projects are expected to result from the presence of the northern spotted owl, not the designation of critical habitat, and are thus considered baseline impacts (see paragraphs 315 through 320 of the DEA). Incremental costs attributable to critical habitat are limited to the administrative costs of additional hours spent by Federal

agency staff and the Service to consider critical habitat during section 7 consultation on these projects.

Comment (178): Many comments describe the adverse impacts that changes in the timber industry have had on local and regional employment levels, government revenues, and overall socioeconomic conditions. Several of these comments request that these impacts be taken into consideration in the economic analysis.

Our Response: Chapter 3 of the DEA describes how, over the past 20 years, the Pacific Northwest timber industry has undergone significant changes that have manifested in reduced timber-related jobs and revenues. The analysis provides detailed data on the changes in timber production levels between 1990 and 2010, and on the changes in industry employment and payroll between 1989, 1999, and 2009 in each of the 56 counties where critical habitat was proposed. This information is intended to provide context for the analysis and illustrate the importance of the timber industry to local economies. In addition, Chapter 6 of the DEA provides a detailed socioeconomic profile of the 23 counties containing proposed critical habitat subunits that contain a higher proportion of Federal lands that are relatively more likely to experience incremental impacts due to the designation of critical habitat. The chapter examines trends in timber harvests, industry employment, and Federal land payments in these counties, and concludes that certain counties may be more sensitive to additional incremental changes in timber harvests, industry employment, and Federal land payments.

Comment (179): The Small Business Administration (SBA) expressed concern that the Service does not have an adequate factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small businesses. It disagrees with the Service's assertion that small businesses are not directly regulated by the proposed rule and states that the Service incorrectly analyzes the universe of affected small businesses by counting the number of consultations required by the designation, as opposed to the number of all small businesses affected by these consultations. SBA also notes that the DEA states private landowners may be affected if they have federally funded or permitted activities on Federal or private land, such as participation in timber sales or timber management projects or application for a section 10 permit.

Our Response: The Service agrees with SBA's statement that small entities (businesses, governments) may be affected by the designation of critical habitat as third parties involved with consultation under section 7 of the Act with Federal action agencies. However, we disagree that these entities are directly regulated. This position is supported by existing case law regarding the certification requirements under the Regulatory Flexibility Act (RFA), the Small Business Regulatory Enforcement Fairness Act (SBREFA) (see paragraphs 378 through 381 of the DEA), and SBA's handbook, ''A guide for Government Agencies: How To Comply With the Regulatory Flexibility Act (2003). However, we believe it is good policy to assess these indirect impacts to third parties if we have sufficient available data to complete the necessary analysis, whether or not this analysis is strictly required by the RFA. Therefore, where third parties are anticipated to participate in consultations under section 7 of the Act with Federal action agencies, these entities are included in the screening analysis (see paragraphs 383 through 392 of the DEA). Please refer to the discussion under Regulatory Flexibility Act later in this final rule and the FEA for a more complete discussion of our factual basis for certification under RFA that this rule will not result in a significant impact to a substantial number of small entities.

Comment (180): An additional entity asserts that the Service is incorrect in stating that only Federal agencies will be ''directly regulated'' by critical habitat designation. It contends that private sector entities relying directly or indirectly on Federal timber sales are also directly regulated. The entity cites case law, stating, ''The RFA requires consideration of *'the small entities which will be subject to the proposed regulation—that is, those small entities to which the proposed rule will apply.' Cement Kiln Recycling Coalition v. E.P.A.,* 225 F. 3d 855, 869 (DC Cir. 2001).'' A critical habitat designation ''applies to'' private parties as much as Federal agencies; a private party seeking a Federal permit that may affect designated critical habitat cannot obtain the permit until a consultation is completed under section 7 of the Act, and has the statutory right to participate in that consultation. Thus, such entities must be considered under the RFA.

Our Response: The Service's current understanding of recent case law, including the *Cement Kiln* case, is that Federal agencies are only required to evaluate the potential incremental impacts of rulemaking on those entities directly regulated by the rulemaking; therefore, they are not required to evaluate the potential impacts to those entities not directly regulated. The language from the *Cement Kiln* case quoted by the commenter merely restates the language of the RFA itself. Several court decisions, including the *Cement Kiln* decision, have interpreted that language to require Federal agencies to analyze the rule's effects on any small entities that are subject to—that is, directly regulated by—the rule, rather than requiring Federal agencies to consider every potential impact that a regulation may have on indirectly affected small entities. *See also Am. Trucking Ass'ns* v. *Envtl. Prot. Agency,* 175 F.3d. 1027 (D.C. Cir. 1999); *Mid-Tex Elec. Coop.* v. *Fed. Energy Regulatory Comm'n,* 773 F.3d 327 (D.C. Cir. 1985); *et al.*

The regulatory mechanism through which critical habitat protections are realized is section 7 of the Act, which requires Federal agencies, in consultation with the Service, to insure that any action authorized, funded, or carried out by the Agency is not likely to adversely modify critical habitat. The designation of critical habitat for an endangered or threatened species only has a regulatory effect where a Federal action agency is involved in a particular action that may affect the designated critical habitat. Under these circumstances, only the Federal action agency is directly regulated by the designation, and, therefore, consistent with the Service's current interpretation of RFA and recent case law, the Service may limit its evaluation of the potential impacts to those identified for Federal action agencies. Under this interpretation, there is no requirement under the RFA to evaluate the potential impacts to entities not directly regulated, such as small businesses. However, EO's 12866 and 13563 direct Federal agencies to assess costs and benefits of available regulatory alternatives in quantitative (to the extent feasible) and qualitative terms. Consequently, it is the current practice of the Service to assess to the extent practicable these potential impacts if sufficient data are available, whether or not this analysis is believed by the Service to be strictly required by the RFA. In other words, while the effects analysis required under the RFA is limited to entities directly regulated by the rulemaking, the effects analysis under the Act, consistent with the EO regulatory analysis requirements, can take into consideration impacts to both directly and indirectly impacted entities, where practicable and reasonable.

Therefore, as discussed in the previous response, where third parties

are anticipated to participate in section 7 consultations, these entities are still included in the screening analysis if sufficient data is available to complete the necessary analysis. The direct compliance costs of section 7 consultations concerning timber sales are the administrative costs of conducting the consultation, which are primarily borne by the Service and the Federal Action Agency, and potential changes in revenues to Federal agencies from timber sales.

Potential impacts to the profitability of timber industry entities resulting from changes in the price or availability of timber represent an indirect effect of the regulation. In this case, we note that potential changes in timber harvests are anticipated to be less than one percent of average annual harvests in the region subject to the designation.

Comment (181): The SBA states that the Service underestimates the economic impact of the rule on the timber industry and private landowners because, in its screening analysis, it only considers administrative costs of section 7 consultations, rather than quantifying the costs of project modifications resulting from those consultations.

Our Response: Project modification costs quantified in the DEA result from changes in the quantity of timber harvested on Federal lands. As discussed in detail in Chapter 4 of the DEA, section 7 consultations on the sale of timber from Federal lands may result in an increase, decrease, or no change in harvest levels, based on several plausible assumptions. We note that if future harvests are restricted, total annual harvests could decrease by 24.56 million board feet (MMBF). This decrease represents less than one percent of 2010 total harvest and the average annual harvests between 2006 and 2010 across the 56-county area overlapping proposed critical habitat. The designation may also result in an increase in annual harvests of 12.28 MMBF, or less than half a percent of total annual harvests in the 56-county area. Finally, it is possible that harvest levels will not change a result of the designation. In summary, the proposed rule is anticipated to have a minor impact on future harvest levels. Although the Service has estimated these potential impact scenarios relative to the total harvest, the agency acknowledges that the designation of critical habitat may have indirect impacts on industry subsectors and/or related sectors with high concentrations of small businesses. However, a more detailed analysis capturing these impacts is not available to the agency at this time.

The direct cost (or benefit) of these section 7 project modifications is a loss (or gain) in Federal revenues collected by the U.S. Forest Service and the U.S. Bureau of Land Management resulting from the associated timber sales. Stumpage values related to these effects are summarized in Exhibit ES–4 of the DEA. In the FEA, we include additional information in the RFA/SBREFA screening analysis (Appendix A) describing these project modification costs, which are borne entirely by Federal agencies.

The potential indirect effects of these lost Federal revenues, in terms of implications for County revenue sharing programs, are discussed in Chapter 6 of the DEA (see paragraphs 293 through 299). In addition, Chapter 6 also identifies the counties with Federal lands more likely to experience changes in harvest levels as a result of the designation and provides background information on harvest and employment trends in these counties.

Comment (182): Several commenters stated that the DEA misrepresented the baseline or underestimates timber harvest impacts on Federal lands. One commenter in particular asserts that the true baseline is best represented by the land management plans that have been adopted by BLM and FS, in which planned annual harvest volumes may total 840 MMBF across all lands encompassed by the NWFP.

Our Response: The baseline projection should represent the best estimate of the world absent critical habitat, given the best available data. Relying on this criterion, the baseline projection first focuses on areas of the proposed designation where incremental impacts to Federal timber harvest are relatively more likely to occur as a result of critical habitat. As identified in the Incremental Effects Memorandum, these areas include matrix lands that are likely to be unoccupied by the northern spotted owl, representing approximately 1.4 million acres of matrix lands out of approximately 12 million Federal acres in the proposed designation. Given that incremental impacts, if any, are likely to occur primarily in these more discrete areas, a projection utilizing the range-wide planned harvest levels contemplated under the NWFP would overstate baseline conditions.

Second, based on historical experience, projected actual timber harvest in the baseline on USFS and BLM lands is likely to be less than that in the formally-approved land management plans under the NWFP. Federal land managers have not achieved this level of timber harvest over the past several years, and do not anticipate this level of harvest in the future, providing further confirmation that the identified long-term sustained yield of 840 MMBF associated with these plans would overstate the baseline.

For those matrix areas where incremental effects may be relatively more likely to occur, the FEA utilizes a variety of planned, historical actual, and projected actual timber harvest data provided by BLM and FS to derive the annual baseline projection, which totals approximately 123 MMBF. This projection is then appropriately caveated, with the FEA noting that within the discrete areas of each subunit where incremental effects may occur, the subunit level projection could vary materially from future actual timber harvest in these areas.

We note further, however, that based on comments received from Federal land managers, we have added an additional sensitivity analysis to Chapter 4 of the FEA. Specifically, the sensitivity analysis tests alternative assumptions concerning: (a) The percentage of northern spotted owl habitat on BLM matrix lands that is likely to be unoccupied, which increases the acreage where incremental timber harvest impacts may occur and thus the baseline projection; and (b) the baseline harvest projection for USFS Region 6, where we assume a 20 percent increase in baseline timber harvest relative to historical yields.

Comment (183): Several commenters questioned whether the DEA was meaningful, because it displays results as a menu of choices, including a potential increase in timber harvest on Federal lands. In addition, one commenter contemplated a potential reduction in annual planned harvest volumes of 500 MMBF as a result of critical habitat designation.

Our Response: The DEA presented alternative scenarios due to considerable uncertainty regarding the specific projects that may be proposed or management options that Federal land managers may consider. These scenarios are intended to present a range of estimates for the potential incremental impacts of various options for complying with section 7 available to Federal agencies. Based on the best available data and information, these decisions, including the adoption of ecological forestry practices, may result in harvest levels being maintained (as described in Scenario #1), increased (Scenario #2), or decreased (Scenario #3). This range of estimates is not meant

to be interpreted as ''over 100 potential outcomes.'' Statistical analyses frequently account for uncertainty by presenting a range of estimates in which each individual data point is not considered an independent outcome. One purpose of this analysis was to aid the Secretary in determining if any lands should be excluded due to the financial burden associated with the designation, and this analysis does so by identifying the subunits and relevant landowners for whom incremental impacts are relatively more likely to occur, as demonstrated through these scenarios.

With respect to the representation of the potential 500 MMBF reduction in annual timber harvest, this figure overstates any possible effect of critical habitat. This volume is roughly equivalent to the total harvest on the National Forest System and BLM lands in the NWFP area in recent years, and is roughly five times the baseline harvest projection for potentially-affected areas. The figure implies that the designation will largely preclude any timber harvest whatsoever on Federal lands operated under the NWFP. Based on the historical record of actual timber harvest volumes and the best available information concerning potential future harvest activity under the designation, we reject this representation.

Comment (184): One comment suggested that the DEA underestimated the administrative costs associated with consultations.

Our Response: The additional burden of 4 to 6 hours described in the FEA reflects an incremental impact to consultations that would already occur due to the listing of the species. These costs do not reflect the total cost of consultations that would occur absent the critical habitat designation. The FEA discusses additional consultations that would not have occurred but for the critical habitat designation.

Comment (185): One commenter stated that the high-impact economic estimate based on a $250/mbf stumpage value underestimates the true economic costs of the proposed designation, and that a stumpage rate of $350/mbf is more realistic.

Our Response: The stumpage values in the economic analysis ($100 to $250/mbf) reflect a wide range of historical values for timber harvest from Federal lands for the years 2000 to 2011 (the most recent estimates that were available). Average stumpage prices vary by forest, species, product, and year, reflecting, among other things, shifts in economic demand. Exhibit 4–11 presents a weighted average of stumpage values across USFS National Forests and BLM districts within the proposed critical habitat designation for each Federal land manager. These values best represent the average price of timber sold in areas of concern where incremental effects are relatively more likely to occur. Please see chapter 4.4.3 of the FEA for further explanation of how we arrived at these values. However, even if we apply the $350/mbf figure, the annual high-impact result would increase by $2.5 to $2.9 million, which is still a relatively small incremental impact.

Comment (186): One submission noted that a number of Pacific Northwest Ski Areas Association (PNSAA) member ski areas operate on National Forest System (NFS) land potentially within the range of the northern spotted owl. The primary request of the comment is that areas covered by special use permits (SUPs) under which the ski areas operate be excluded from the final designation. The comment goes on to note potential burdens critical habitat designation may entail for these areas and their economic impact. This economic activity and any related regulatory impacts are not addressed in the draft economic analysis.

Our Response: While ski areas are found on a very small proportion of the forested lands in the Pacific northwest, our analysis found these lands provide essential high-value northern spotted owl habitat to the critical habitat network. Currently, impacts to northern spotted owl habitat in these areas are subject to the section 7 consultation process for effects to northern spotted owls. Our experience shows that ski area development actions generally tend not to conflict with northern spotted owl and critical habitat conservation needs, so we do not anticipate any significant regulatory burden associated with the designation of these lands as critical habitat. Removing lands managed under ski area special use permits would increase fragmentation of the critical habitat network and potentially continuous tracts of northern spotted owl habitat. Therefore, there is a greater benefit to the species associated with retaining ski areas in the critical habitat designation. In situations involving the imminent loss of human life or property the managing agency should implement emergency section 7 measures to avoid compromising public safety. A note regarding ski area activities and their economic impact has been added to Chapter 1 of the FEA.

Comment (187): Several submissions commented upon how critical habitat may affect wildfire risks and related coverage of this issue in the draft economic analysis. One comment asserts that critical habitat makes fuel management more difficult, resulting in the destruction of habitat. Another comment notes the prospect of reduced fire risk under critical habitat due to restoration of riparian forests or road closure.

Our Response: The FEA addresses the potential impacts of critical habitat on fire management in Chapters 4 and 8. In Chapter 4, the FEA discusses the fact that ecological fire salvage activities contemplated as part of proposed critical habitat designation on both reserved and nonreserved lands may result in incremental economic effects. Due to data limitations and fire location uncertainty, however, these effects are not quantified. In the benefits discussion in Chapter 8, the FEA recognizes that it is possible that the designation could result in increased resiliency of timber stands associated with improved timber management practices, such as thinning, partial cutting, and adaptive management and monitoring. These efforts may reduce the threat of catastrophic events such as wildfire, drought, and insect damage. This in turn may generate benefits in the form of reduced property damage.

Comment (188): One comment noted that the DEA only considers impacts related to logging, and limits its coverage of many other economic purposes that critical habitat may negatively affect.

Our Response: Based on a review of the consultation record, recognized threats to the species, and other related information, the FEA focuses on those economic activities that could be materially affected by the designation. These activities include timber harvest on public and private lands, fire management activities, and linear projects (roads, gas pipelines, utility lines, etc.). We are not aware of other economic activities that will be materially affected by the designation. In addition, the FEA qualitatively considers potential benefits from the designation on certain activities, including recreation.

Comment (189): Multiple submissions assert that the DEA does not sufficiently consider the cumulative economic impacts of northern spotted owl conservation efforts since the time of its listing, instead focusing primarily on the potential incremental impacts of the proposed critical habitat designation prospectively.

Our Response: The U.S. Office of Management and Budget's (OMB) guidelines for best practices concerning the conduct of economic analysis of

Federal regulations direct agencies to measure the costs of a regulatory action against a baseline, which it defines as the ''best assessment of the way the world would look absent the proposed action.'' (OMB, ''Circular A–4,'' September 17, 2003, available at *http://www.whitehouse.gov/omb/circulars/a004/a-4.pdf.*) The baseline utilized in the DEA is the existing state of regulation, prior to the designation of critical habitat, which provides protection to the species under the Act, as well as under other Federal, State, and local laws and guidelines. To characterize the ''world without critical habitat,'' the DEA also endeavors to forecast these conditions into the future over the timeframe of the analysis, recognizing that such projections are subject to uncertainty. This baseline projection recognizes that the northern spotted owl is already subject to a variety of Federal, State, and local protections throughout most of its range, due to its threatened status under the Act and regardless of the designation of critical habitat.

Significant debate has occurred regarding whether assessing the impact of critical habitat designations using this baseline approach is appropriate, with several courts issuing divergent opinions. Courts in several parts of the country, including the 9th Circuit Court of Appeals, which has jurisdiction in Washington, Oregon, and California, have ruled that the consideration of economic impacts in the designation of critical habitat should be based on the incremental impacts of the designation. See, e.g., *Home Builders Association of Northern California* v. *United States Fish and Wildlife Service,* 616 F.3d 983 (9th Cir. 2010), cert. denied, 179 L. Ed. 2d 301; *Arizona Cattle Growers* v. *Salazar,* 606 F.3d 1160 (9th Cir. 2010), cert. denied, 179 L. Ed. 2d 300.

Chapter 3 of the FEA provides extensive discussion of the historical and current economic conditions against which critical habitat is designated. Specifically, the document provides data, by each of the 56 counties overlapping the proposed rule, on changes in timber harvests, timber industry employment, and timber industry payroll since 1989. It also provides a detailed discussion of the existing revenue-sharing programs related to timber harvests and the data describing which counties are most reliant on these programs.

Comment (190): One comment states that, while accepted in the academic literature, existence values, contingent values, recreational hedonic values, and other nonmarket values that might be assigned to critical habitat designation are unreliable and irrelevant where the only benefit of relevance to the decisionmaker is the conservation of a listed species. The Act calls for a cost-effectiveness approach where the Service should seek to minimize the economic costs and burdens that must be incurred to designate only that habitat that is essential for species conservation. Other benefits are irrelevant and should not be offset against the costs.

Our Response: The valuation of nonmarket goods as part of the evaluation of the benefits of proposed Federal regulations is a widely accepted and regularly applied practice. The U.S. Office of Management and Budget (OMB) explicitly recommends the use of revealed preference (recreational demand models, hedonics) and stated preference methods (contingent valuation) in its guidance to Federal agencies (Circular A–4) on best practices for preparing regulatory analysis required by Executive Order 12866. Circular A–4 includes criteria for conducting and applying stated preference studies, which are commonly used to measure existence values. Chapter 8 of the FEA describes the data limitations preventing the Service from quantifying or estimating the value of these benefits. Thus, the direct benefits of the designation are described qualitatively.

In weighing the benefits of including an area in critical habitat as opposed to excluding it, ancillary benefits may be considered, although we agree with the comment that the most relevant benefit of designating critical habitat for the northern spotted owl are the benefits to the species' conservation and recovery. However, ancillary benefits are relevant only to a decision whether to exclude an area under section 4(b)(2) of the Act, not to the threshold determination that an area meets the definition of critical habitat. We agree that only lands that meet the definition of critical habitat (areas occupied at the time of listing containing features essential to the species' conservation or unoccupied areas that are themselves essential to the species' conservation) should be designated.

Comment (191): One comment states that most of the economic benefits (e.g., existence value, wildlife viewing, ecosystem services) derive from the listing; the incremental benefit of critical habitat is negligible to nonexistent.

Our Response: As discussed in detail in the DEA, particularly Chapter 4, the designation of critical habitat may result in changes in timber management practices. These physical changes are likely to support the conservation and recovery of the northern spotted owl. As described in Chapter 8 of the DEA (paragraphs 342 through 343), the benefits of the regulation in terms of improved probability of northern spotted owl conservation and recovery are difficult to quantify due to existing data limitations.

Comment (192): Several commenters asserted that in not attempting to quantify environmental and ecosystem services benefits, the Service is not employing the best available science regarding the benefits that endangered species and their critical habitat provide, and is undervaluing the economic benefits of the designation. The comment asserts that multiple global efforts have been developed to quantify ecosystem services in order to inform policy, promote incorporating ecosystem services into decision making, and provide guidelines to assess costs and benefits of policies and better account for ecosystem service effects. Commenters encourage the Service to make a credible (if rapid) attempt to value ecosystem service benefits and consider ecosystem services.

Our Response: The Service recognizes that much attention has been paid nationally and globally to valuing ecosystem services provided by landscapes. Published, peer-reviewed studies provide information on values of multiple categories of ecosystem services (e.g., agricultural production, water quality regulation, carbon storage and sequestration, recreation, aesthetic values, etc.) across a variety of land use types (e.g., wetlands, forests, etc.). Over the past 20 years, multiple studies have relied on this literature to develop large-scale benefits transfer analyses in order to estimate a total value of a parcel of land, a watershed, a State, or even the planet (e.g., Costanza 1997, as described in the comment letter).

The first comment focuses in particular on the potential relevance to the DEA of a large-scale benefits transfer estimate developed for the Skykomish watershed. This study is characterized as a ''rapid ecosystem service valuation.'' In general, the authors first identified land cover types present in the watershed, identified the categories of ecosystem services relevant to those types, and then researched existing studies valuing those categories of ecosystem service benefits. From the available literature, the authors estimated a range of values for each category of ecosystem service by relying on the low end and high end estimates identified. The authors then summed across relevant ecosystem service values

to estimate a value range for each land cover type, and summed across the land cover types within the watershed to estimate a value range for the entire Skykomish watershed of $245 million to $3.3 billion per year.

While case- and site-specific modeling to value ecological benefits is preferable, the Service agrees that benefits transfer methods may be useful in the absence of resources for intensive primary research. To use these methods in support of Federal rulemakings, OMB has developed guidelines for conducting credible benefits transfer. A rapid assessment of ecosystem services, such as that developed for the Skykomish, is unlikely to meet the criteria specified by OMB. Multiple responses to similar large-scale benefits transfer studies have highlighted the theoretical and practical problems associated with estimating and extrapolating per-acre estimates of values taken from other studies of ecosystem services (e.g., Bockstael *et al.,* 2000).

First, this approach ignores site-specific factors affecting the production of services by not accounting for variations in the condition or quality of an ecosystem. For example, a less dense or degraded forest area stores less carbon than a dense, healthy forest. The extent to which a given acre of land delivers ecosystem services also depends on the surrounding land uses. For example, a wetland downslope of cropland may provide a valuable service by filtering nitrogen runoff and decreasing the total amount of the nutrient reaching a water supply, whereas a wetland surrounded by forest is unlikely to intercept such runoff to begin with and, therefore, would not provide this service. By relying on site-specific studies valuing these types of services in other areas—the Skykomish study relies on a variety of studies of ecosystems all across the country—these differences are not taken into account. In addition, benefits transfer for rapid assessments, such as the Skykomish study, fail to account for differences in values associated with differences in socioeconomic context between sites. For example, the recreational value of a forest depends on multiple site-specific socioeconomic factors such as accessibility (landownership and proximity to roads and towns). In transferring values of ecosystem services from other studies, the Skykomish study fails to account for such ecological and socioeconomic context affecting these values. This represents one reason we do not rely on the values presented in this study in the DEA.

Second, rapid assessments do not provide information on the effects of changes in the condition or quality of an ecosystem on the associated service values. The Skykomish study assigns an equal value to all ''forest'' acres and therefore does not provide any information to support an analysis of the ecosystem service benefits of changes in the management of a forest. It is the incremental change in the value of a service provided that is relevant to the DEA. For example, the DEA concludes critical habitat designation for the northern spotted owl may result in the harvest of fewer board feet of timber in a portion of the forests. Decreased harvest of trees may not change the land cover type (forest) as characterized in the rapid assessment; it simply affects the density of the trees in given areas. The rapid assessment approach does not address such differences across areas within a land use type (i.e., forests); rather, it is more useful in comparing the ecosystem services provided across different land use types (i.e., deserts, prairie, forests, marshes) and is therefore of limited use in evaluating tradeoffs associated with changes in the condition of a given ecosystem.

Consequently, absent a full-scale change from one ecosystem type to another, the rapid assessment approach to valuing benefits of critical habitat designation does not provide a valid approach to quantifying the ecological benefits of critical habitat designation for the northern spotted owl. While the DEA provides information on the types of services associated with the ecosystems types potentially affected by the designation, it does not attempt to perform a rapid assessment of the values of these services, for the reasons stated.

Comment (193): One commenter suggested that the Service could employ any of three approaches to value ecosystem service benefits of critical habitat designation: (1) The Integrated Valuation of Ecosystem Services and Tradeoffs (InVEST) model; (2) the Ecosystem Services Review Method; and (3) the Wildlife Habitat Benefits Estimation Toolkit. The comment states that all three are available and ready for immediate, widespread use. A second comment states that the Service is far behind the ecosystem services valuation curve.

Our Response: The Service recognizes that multiple tools exist that focus on evaluating ecosystem service benefits of land management changes. The authors of the DEA have experience with a number of these methods, including the InVEST tool and the Wildlife Habitat Benefits Estimation Toolkit. As a practical matter, the InVEST tool could be used to evaluate potential ancillary benefits of critical habitat for the northern spotted owl. The tool comprises a series of biophysical and economic models that aim to translate changes in a given landscape into changes in the delivery of multiple ecosystem services. These models are data-intensive and require site-specific information.

For each ecosystem service, InVEST relies on two separate models: One that estimates the biophysical change in the delivery of a service and, for some services, a second economic model that monetizes that change. For example, to estimate the change in water quality resulting from changes in the management of a given forest, the following types of detailed, on-the-ground, data would be required as inputs to the biophysical model: A digital elevation model, soil depth, plant available water content (the fraction of water that can be stored in the soil profile for plants' use), root depth of vegetative cover, evapotranspiration, nutrient or sediment loading for each land use type across the landscape, the vegetation filtering capacity of the land cover (as a function of the type and density of vegetation), and pre-existing water quality conditions for model calibration (e.g., nitrogen, phosphorus, or sediment concentrations). While some of these data are available; some would need to be generated at a relatively fine level of resolution in order to model the incremental changes in the ability of the landscape to filter pollutants likely to result from the designation. The InVEST tool values this service in terms of changes in treatment costs for nutrients or sediment. These costs are likewise site-specific.

This effort is particularly significant in light of the conclusion of the DEA that the critical habitat designation is most likely to generate only minor incremental changes in the management of land uses within the designation. The key change is a potential increase or decrease in timber harvest of less than one percent in the region. While the analysis describes qualitatively that this change potentially could generate some marginal improvements in services such as water quality regulation, these benefits are expected to be relatively minor, ancillary benefits of the rule. The same is true of application of other models to evaluate benefits, such as the Multiscale Integrated Model of Ecosystem Services (MIMES), also described in the comment. Finally, the areas most likely to produce these ancillary benefits (e.g., Federal matrix lands) are included in the final designation; thus additional analysis of

the ancillary benefits of including these areas would not change the final regulatory decision. The DEA therefore provides qualitative information to the Service regarding potential ancillary benefits.

The objective of the Ecosystem Services Review (ESR) Method is to provide companies with information on how their business depends on ecosystem services, whether their business affects their (or others') ability to access these services, and opportunities to capitalize on and minimize effects on these services. The ESR is not a quantitative tool but a series of steps embedded in a spreadsheet model to help users incorporate consideration of ecosystem services into business decisionmaking. While useful to corporations, it is unclear how this tool may be used to improve the benefits discussion in the DEA. Section 8.2 of the DEA describes potential categories of ancillary ecosystem service benefits that may result from the designation and where (in which units) these benefits may occur. This information is provided for the Service to consider alongside the costs. The ESR does not provide a means to value these services.

The Wildlife Habitat Benefits Estimation Toolkit is a benefits transfer tool developed by the Defenders of Wildlife and Colorado State University for the purposes of valuing ecosystem services associated with species and habitat conservation, such as property values, recreation, and existence values. The benefits transfers facilitated by this toolkit suffer from some of the same issues as the rapid assessment described above. The policy context or sites subject to analysis are most often not transferable to the issue being evaluated: In this case, the land management changes resulting from the critical habitat designation for the northern spotted owl.

Comment (194): One organization stated the DEA is incomplete, in part because it focuses too narrowly on impacts to the timber industry, while the final designation will also affect the economies of the region in other ways. Specifically, two comments stressed that the analysis should consider the total value of the goods and services provided by forests in this region, including reduced wildfire threats, reduced impacts of droughts, reduced threat of insect damage, reduced property damage due to these risk reductions, increased quality or quantity of recreational activities, aesthetic improvements for people passing on nearby roads, carbon sequestration, and improved water quality.

Our Response: The economic analysis's focus on changes in timber harvest practices is appropriate because this activity is the conduit for all other ''on-the-ground'' changes, positive or negative, resulting from the designation. Increases or decreases in timber harvests could positively or negatively affect regional socioeconomic conditions. Thus, Chapter 3 of the DEA provides context explaining historical and current conditions, and Chapter 6 identifies counties that may experience the greatest impacts. The same changes in timber harvests could affect the northern spotted owl's conservation and recovery, discussed in Chapter 8 of the DEA. Finally, these changes in timber harvests are the driver of the potential changes in other ecosystem services, including recreational opportunities, described in the comment. These ancillary benefits are also described in Chapter 8 of the DEA.

Responses provided to earlier comments review the best available modeling tools for quantifying and valuing ecosystem services and describe why these tools were not employed in this instance. In the FEA, we expand our qualitative discussion of potential ancillary benefits to include the broader set of ecosystem service categories discussed in the comment.

Comment (195): One organization states that OMB's Circular A–4 is fundamentally flawed in excluding the flow of ecosystem services from the baseline and recommending discounting practices that are inconsistent with ecosystem service valuation. The comment further states that Circular A–4 is insufficient because it provides the Service with a rationale to avoid quantifying the benefits of critical habitat designation by allowing for a qualitative assessment where benefits are ''difficult to quantify.''

Our Response: The conceptual framework of the FEA is to evaluate impacts by comparing the world without critical habitat (baseline) to the world with critical habitat. The difference between these two states represents the incremental impacts of the rule. Thus, the FEA does not exclude the flow of ecosystem services from the baseline. To understand how the flow of ecosystem services may change, one must first understand the categories and magnitude of existing services. In this way, while not explicitly quantified in the analysis, the current flow of ecosystem services is implicitly captured in our characterization of the baseline condition.

Put another way, the organization appears to be asking us to first present the total value of all services provided by forests included in proposed designation. Then, our analysis would estimate the value of the incremental change in quality and quantity of these services as a result of the designation. Such an effort would be equivalent, on the cost side of the analysis, to first presenting the total value (in terms of stumpage prices) of all the timber found in proposed critical habitat, and then presenting the value of the change in the amount of timber harvested as a result of the regulation. On both sides of the equation, providing a monetized estimate of the value of the baseline resources is not a necessary step to understanding the value or the change in services resulting from the designation. Correctly *characterizing* the baseline conditions is necessary, but valuation efforts appropriately focus on what will change, rather than what exists today.

Substantial debate surrounds the selection of appropriate discount rates for ecosystem services. While Circular A–4 recommends applying discount rates of 7 and 3 percent for regulatory analyses, it does not preclude the application of alternative discount rates for comparison. The comment recommends assessing ecosystem services benefits using discount rates of zero and one percent, in addition to three and seven percent. Because ecosystem services are not quantified in the economic analysis, we do not consider additional sensitivity analysis around the discount rate assumption.

Further, such an effort would require some data that are not currently available.

Comment (196): One comment states that the cost of avoiding carbon emissions is less than the cost of climate mitigation, and several studies have shown that changing forest practices is one of the more efficient and economical ways to store carbon and reduce emissions. Given that carbon storage is just one of the many important ecological services provided by mature and old forest, every effort should be made to avoid as much warming as possible by protecting mature forests.

Our Response: We have added discussion of the potential for increased carbon sequestration to Chapter 8 of the FEA.

Comment (197): A comment asserts that the Presidential Memorandum to the Secretary of the Interior on the northern spotted owl is not consistent with the Endangered Species Act because it states that ''the benefits of excluding private lands and State lands may be greater than the benefits of

including those areas in critical habitat.'' The commenter is concerned that this statement is made in the Presidential Memorandum without an attempt to quantify ecosystem services benefits of the designation on these lands, and these benefits are therefore given an effective price of zero.

Our Response: We do not believe that the directive in the Presidential memorandum is inconsistent with section 4(b)(2) of the Act, which states that the Secretary may exclude areas from critical habitat if the benefits of exclusion outweigh the benefits of inclusion, as long as failure to designate such areas will not result in extinction of the species. The purpose of the economic analysis is to provide the Secretary of the Interior with information to support analysis of where the benefits of excluding a particular area may outweigh the benefits of including that particular area as critical habitat. In providing the qualitative discussion of benefits, the FEA does not assign zero values to these potential benefits; this discussion is provided for the Secretary to consider alongside the quantitative information provided.

Comment (198): One commenter stated that the DEA estimates the benefits of increased timber production in terms of the market value of the logs, but ignores the costs to Federal agencies of producing the logs (i.e., costs of managing the land for timber production and executing the timber sales), and that the total cost to taxpayers may exceed the logs' market value.

Our Response: In support of its comment that the costs to Federal agencies (and ultimately taxpayers) of timber sales exceeds the revenues from the sales, the commenting organization cites several studies from the early 1980s, as well as a more recent report published by the Congressional Research Service (CRS) in 2004 (Gorte, R.W. 2004, Below Cost Timber Sales: An Overview, CRS, Order Code RL32485).

We agree that whether the net benefit of timber sales in terms of costs and revenues is positive has been the subject of much debate. CRS summarizes this debate and notes ''the estimates of financial results of [USFS] timber sales vary widely. This disparity is due to differences in basic approach—profit-and-loss, cash flow, or other approach—and in assumptions about relevant costs'' (Gorte, R.W. 2004, summary page). In particular, CRS notes differing assumptions regarding which Agency costs are relevant and how to allocate those costs to specific sales may result in different answers using the same basic accounting approach.

CRS also notes that the USFS sells timber for many reasons, such as ''to generate receipts, to supply wood for manufacturers, to provide employment, to expand access for motorized vehicles, to alter the composition and distribution of vegetation in the area, and more'' (p. 5). The ''value'' of all of these positive attributes of the sales may not be captured in the stumpage price paid by the loggers or mills purchasing the timber, as many of these attributes represent market externalities. Furthermore, ''the multiple outputs, environmental impacts, and differing time scales of timber sales and related activities make identifying relevant costs and comparing them with relevant revenues problematic. Two decades of debate have not resolved the dilemma, and further debate seems unlikely to result in widespread agreement'' (Gorte, R.W. 2004, p. 7).

Thus, whether the Federal agency costs of baseline timber sales anticipated in the absence of critical habitat, or new sales potential generated by the designation, exceed revenues is unknown. However, the fact that these sales are often conducted for multiple purposes, such as improved ecosystem services or regional employment, and those purposes may have value that is not captured in stumpage prices, suggests that our assumption that the benefits of the sales exceed costs is not unreasonable.

Comments on the Economic Analysis From Counties

Comment (199): Several counties including Wasco, Del Norte, Klickitat, and Skamania Counties expressed criticism of the Draft Economic Analysis, including concerns about the incremental analysis approach and the negative economic impact of reducing or restricting commercial timber harvest on local communities (employment, tax base, quality of life, and other socioeconomic impacts).

Our Response: The economic impact to local counties of this critical habitat designation will be determined in large part by the timber management direction the Federal land managers take within critical habitat lands. Project modification costs quantified in the FEA primarily result from changes in the quantity of timber harvested on Federal lands. As discussed in detail in Chapter 4 of the DEA, section 7 consultations on the sale of timber from Federal lands may result in an increase, decrease, or no change in harvest levels, based on several plausible assumptions. We note that if future harvests are restricted, total annual harvests could decrease by 24.56 million board feet (MMBF). This decrease represents less than one percent of 2010 total harvest and the average annual harvests between 2006 and 2010 across the 56-county area overlapping proposed critical habitat. The designation may also result in an increase in annual harvests of 12.28 MMBF, or less than half a percent of total annual harvests in the 56-county area. Finally, it is possible that harvest levels will not change as a result of the designation. In summary, the designation is anticipated to have a minor impact on future harvest levels.

The DEA used a filtering approach to identify those specific areas where incremental timber harvest effects may occur. Further explanatory detail on these methods has been added to Chapter 4 of the FEA. In addition, the chapter also notes the potential effects to the baseline timber projection related to increasing the percentage of matrix lands with northern spotted owl habitat that are likely to be unoccupied.

Comment (200): Two small county governments submitted comment stating the proposed rule would have disproportionate impacts on local employment, payroll, and county services funded by revenues-sharing programs and taxes. They provide data describing economic conditions in the 1970s and 1980s, and describe the economic decline experienced since the owl was listed in 1991.

Our Response: We recognize that many small governments have experienced significant changes in employment, payroll, and county revenues as a result of the decline in the timber industry over the last 21 years. Chapter 3 of the DEA provides detailed data by county describing these changes and providing context for the analysis. Chapter 6 provides information specific to the counties where changes in Federal timber harvests are relatively more likely. We note that these counties are not directly regulated by the designation of critical habitat for the northern spotted owl; rather, potential impacts result from changes in harvest practices on Federal lands or where other Federal actions may be involved.

Given the numerous factors affecting the future of the industry, including changes in the availability of Federal timber, mechanization, transfer of capital investment away from the region, closure of less efficient mills, and fluctuating demand for wood products, we are unable to provide quantitative projections of future timber-related employment. Furthermore, as discussed in Chapters 3 and 6 of the DEA, uncertainty regarding

the future of existing county revenue-sharing programs, such as PILT and SRS, confound our ability to predict potential changes in county revenues. However, we note that reasonable assumptions suggest overall changes in harvest levels resulting from the designation are likely to be less than one percent of current levels. Chapter 6 of the DEA discusses the counties most likely to see the largest changes. In addition, most of the costs cited by the commenter, if not all, are attributable to the listed status of the northern spotted owl, rather than the incremental effects of critical habitat.

Comment (201): Several county governments reference a report prepared by the Sierra Institute for Community and Environment and Spatial Informatics Group, titled ''Response to the Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl by Industrial Economics,'' and submitted as a public comment. Funding for the report was provided by the National Forest Counties and Schools Coalition. The report states that the DEA's assessment is insufficient in its documentation of cumulative socioeconomic impacts and current socioeconomic conditions. It provides detailed discussion and data concerning a variety of characteristics for communities potentially affected by the designation, including: Number of mills and mill closures; employment patterns; revenue-sharing payments to counties; family income; poverty levels; home ownership; health outcomes and factors; and enrollment in programs such as School Free and Reduced-Price Meals (FRPM).

Our Response: Chapter 3 of the DEA is intended to provide context to the decision maker regarding historical changes in the timber industry in the Pacific Northwest in terms of production, employment, income, and county revenues. It also discusses multiple possible causes contributing to these changes, including protection of the northern spotted owl. The Sierra Institute for Community and Environment report provides additional socioeconomic information supplementing the background information provided in Chapter 3. Text summarizing the contents and availability of this report has been added to the FEA. We note that verification of the data provided by the Sierra Institute for Community and Environment is complicated by the fact that citations are not provided for the majority of the report's figures and data.

Comment (202): The Sierra Institute for Community and Environment states in several places in its report that the DEA argues the loss of 30,000 jobs in the timber industry between 1990 and 2010 was offset by regional gains in population and employment of 15 percent and 18 percent, respectively. They state that the DEA errs by assuming that job gains in one time period offset losses in another, and that job gains (and losses) are equally distributed across the region. In addition, they claim that the DEA does not analyze or sufficiently discuss the issue of disparity and does not discuss how areas with a proportionally greater amount of employment in the timber industry are affected by the proposed critical habitat designation.

Our Response: The authors are referring to information provided in paragraphs 14 and 106 of the DEA, which present regional job loss figures and changes in regional population and employment. The DEA simply presents these facts; it makes no assumptions, and draws no conclusions, about whether lost timber jobs are offset by overall employment gains in the region or how job losses and gains are distributed across the region. Detailed analysis of rate and nature of reemployment of former timber industry employees is complex and beyond the scope of the DEA.

Chapter 6 of the DEA attempts to address potential disparity in the distribution of regional impacts of the designation. It combines background information on timber industry harvest and employment trends (presented in Chapter 3), and county dependency on revenue-sharing payments, with information about subunits where changes in timber harvest are possible (Chapter 4). It highlights the counties most likely to be affected by the rule based on proximity to affected subunits, and identifies which of these counties have already experienced the most significant declines in the industry over the last 20 years. The report notes that these counties may be more sensitive to future changes in timber harvests.

Definitely linking changes in timber harvests to timber-related jobs in certain communities is challenging. Timber industry jobs are not necessarily closely correlated with the amount of timber being harvested in that specific county; some mills or related manufacturers (e.g., wood product manufacturers) may rely on resources harvested from outside their immediate community. In its presentation of historical data on regional mill closures, the Sierra Institute for Community and Environment acknowledges, ''Other reasons for mill closure also include, but are not limited to, industry closing older, less efficient mills, closure of mills that handled only larger trees coupled with less old-growth timber available, and shipping raw logs and cants out of the region for processing elsewhere. Additional study is needed'' (page 31).

Teasing out the precise location of potential regional impacts resulting from critical habitat designation is particularly challenging due to the relatively small overall change in harvest anticipated to result from the final rule (at worst, a less than one percent decline in annual harvest). This marginal change in available Federal timber is unlikely to cause large-scale changes in the regional industry. Identification of who will experience impacts requires better understanding of potential substitutes and the degree of flexibility in the current production system, as well as proprietary information about the financial characteristics and operations of individual mills. Such data are not available to us and are not provided in the Sierra Institute for Community and Environment's report.

Comment (203): The Sierra Institute for Community and Environment report states that the DEA fails to link job losses to socioeconomic conditions and that this is required by the February 2012 Presidential Memo.

Our Response: The Presidential Memorandum directs the Secretary of the Interior to: (1) Publish, within 90 days of the date of this memorandum, a full analysis of the economic impacts of the proposed rule, including job impacts, and make the analysis available for public comment. The DEA satisfied this direction. It estimates the incremental change in social costs and benefits that may result from the proposed rule, as required by Executive Order 12866, following OMB's guidance on best practices as defined in *Circular A–4,* and consistent with existing case law; and, it provides a separate analysis of potential job impacts in Chapter 6.

The memorandum did not require the Secretary to take the additional step of developing complex models to link changes in timber industry employment to changes in socioeconomic conditions, such as poverty rates, homeownership, and participation in food assistance programs, as suggested by the report authors. Furthermore, the authors of the Sierra Institute for Community and Environment report acknowledge that linking changes in socioeconomic factors to changes in land management, and specifically to critical habitat designation, is challenging due to time constraints and complex data requirements (see, for example, pages 94, 105, 168 of the Sierra Institute for

Community and Environment report). As a result, the organization does not estimate these changes in its report.

Comment (204): The Sierra Institute for Community and Environment report states that an unintended consequence of critical habitat designation is that private landowners ''do nothing'' due to the increased cost of compliance, and that this has real social and environmental costs, such as reducing job availability and revenues and increasing fire risk.

Our Response: As described in Chapter 5 of the DEA, there is a potential for increased compliance costs, such as preparing environmental impact statements. In Washington, the DEA indicated that this may occur only in the event that the State Forest Practices Board redefines all suitable habitat overlapping Federal critical habitat within SOSEAs as ''critical habitat state'' (see paragraphs 227 through 232 of the DEA). The likelihood of such an outcome is uncertain. If it occurs, we estimated that at most 21,715 ac (8,788 ha) of proposed private lands could be incrementally affected. The remaining lands are already considered ''critical habitat state'' or are protected by existing or proposed HCPs and SHAs. The potential social and environmental costs of not harvesting these 21,715 ac (8,788) over the 20-year timeframe of the analysis are too small to measure.

In California, the FEA states that one stakeholder noted that landowners may be required to provide additional documentation under CEQA to demonstrate that their management plan timber harvest plan will mitigate impacts to critical habitat. Since CALFIRE has stated that it is unlikely to require additional protective measures for designated critical habitat beyond those already required by State regulation, any incremental costs would be limited to the possibility for additional CEQA review.

The FEA also identifies possible changes to timber harvest practices suggested by private parties as potentially occurring due to regulatory uncertainty, ranging from harvesting existing trees as early as feasible to discontinuing use of the property for timber production. However, due to the high degree of uncertainty over whether these impacts may occur, we were not able to quantify the potential effects.

We note that all private lands were excluded from critical habitat for the northern spotted owl under section 4(b)(2) of the Act (see Exclusions), therefore none of the potential scenarios considered by the DEA are germane to the final designation.

Comment (205): The Sierra Institute for Community and Environment report states that the DEA is insufficient because it does not adequately characterize cumulative socioeconomic impacts. The authors state that ''understanding current condition requires an understanding of what has transpired in recent years and trend [sic], which are, for the most part, not factors in the analysis.'' They also question why the Entrix report and the 2012 analysis ''ended up in inconsistent places with respect to baseline and included incremental impacts.''

Our Response: The DEA provides data on historical changes in timber industry production, employment, and income (see Chapter 3). It also provides information about trends in county revenue-sharing payments. This information is included in order to provide the Secretary with context for the incremental impacts of the analysis.

The OMB guidelines for best practices (*Circular A–4*) concerning the conduct of economic analysis of Federal regulations direct agencies to measure the costs of a regulatory action against a baseline, which it defines as the ''best assessment of the way the world would look absent the proposed action.'' The baseline utilized in the DEA is the existing state of regulation, prior to the designation of critical habitat, which provides protection to the species under the Act, as well as under other Federal, State, and local laws and guidelines. To characterize the ''world without critical habitat,'' the DEA also endeavors to forecast these conditions into the future over the timeframe of the analysis, recognizing that such projections are subject to uncertainty. This baseline projection recognizes that the northern spotted owl is already subject to a variety of Federal, State, and local protections throughout most of its range, due to its threatened status under the Act, and regardless of the designation of critical habitat.

Significant debate has occurred regarding whether assessing the impact of critical habitat designations using this baseline approach is appropriate, with several courts issuing divergent opinions. In 2010 and 2011, courts in several parts of the country, including the Ninth Circuit Court of Appeals, which has jurisdiction in Washington, Oregon, and California, ruled that decisions concerning designation of critical habitat should be based on the incremental impacts of the rule. The 9th Circuit cases were appealed to the Supreme Court, which declined to hear them.

The Entrix report analyzing the 2008 designation was prepared under subcontract to Industrial Economics, Incorporated (IEC), the authors of the 2012 analysis, and project managers from IEC worked closely on both efforts. The difference in the two analyses regarding whether to quantify impacts resulting from baseline regulatory protections is due to the change in case law described in the previous paragraph.

Comment (206): The Sierra Institute for Community and Environment report questions why the background data provided on timber industry employment and harvests do not factor into the overall assessment and analysis of impacts. The report states that the analysis does not address localized and community-level impacts.

Our Response: As described above, Chapter 6 of the DEA combines data from Chapters 3 and 4 of the analysis to identify counties that may be particularly susceptible to changes in timber harvests resulting from the designation. Employment and harvest trend data are generally available at the county level through publicly available sources, such as State natural resource agencies, the U.S. Census, and the U.S. Bureau of Labor Statistics. Assessing distributional impacts as a finer level of resolution is challenging given a lack of data. In addition, linking changes in community outcomes to the designation would require complex modeling that is beyond the scope of this analysis given the numerous other confounding factors and the relatively small changes in annual harvest that could result from the designation.

Comment (207): The Sierra Institute for Community and Environment report states that counties, municipalities, and schools were ''given short shrift'' in the DEA and that there was no substantive exchange about the conditions of counties or municipalities for the analysis. In addition, other economist commenters also said that they were not consulted for the DEA.

Our Response: During preparation of the draft, IEC contacted many stakeholders, including Federal agencies, State governments, and representatives of the timber industry, and sought to obtain economic and other relevant information from publicly available sources. They collected and analyzed data on historical changes in timber harvests and timber industry employment and payroll for each of the 56 counties overlapping the proposed designation and reviewed literature related to impacts to regional communities, including counties. IEC conducted research on county revenue sharing programs and presented data on the proportion of total county revenues

derived from these programs. Two of the eight report chapters in the FEA focus exclusively on historical and current conditions in the counties, identifying those that are most likely to experience incremental impact and those that are likely to be more sensitive to changes in in harvests resulting from the proposed regulation.

IEC also reached out directly to County representatives. On June 6, 2012, IEC emailed representatives of Siskiyou, Skamania, and Douglas Counties, as well as the Association of O & C Counties, the Association of Oregon Counties, and the Washington State Association of Counties, and offered to meet with them via conference call. On June 25, 2012, IEC received a letter from representatives of Skamania, Douglas, and Siskiyou Counties requesting a meeting with all of the counties that may be affected by the designation. Since the comment period closed on July 6, 2012, the Service determined that there was not time to arrange a meeting with all 56 counties. However, on July 20, 2012, per section 4(b)(5) of the Act, we again invited all State agencies and affected jurisdictions to submit their comments on the proposed critical habitat revision.

Comment (208): The Sierra Institute for Community and Environment report questions the DEA's statement that employment in California, Oregon, and Washington increased only three percent between 2000 and 2010. The report states that reliance on Bureau of the Census and Bureau of Labor Statistics for employment data, such as the data presented in Exhibits 3.6 and 3.7 of the DEA, will result in an undercount of employment. Lastly, the authors state that they were unable to replicate the numbers in the tables because the methodology is inadequately specified.

Our Response: In both the Executive Summary and Chapter 3, the DEA reported that total employment in California, Oregon, and Washington increased by three percent between 2000 and 2010. IEC has added the source for this data, which is the Bureau of Economic Analysis (BEA), to the FEA. The BEA provides data on total annual State employment, which IEC used to determine the tri-State area employment increase between 2000 and 2010. The data is publically available and can be found online at BEA's Interactive Data Web site at *http://www.bea.gov/itable/.*

The data source for Exhibits 3.6 through 3.8 of the DEA, which present historical timber industry employment and payroll data for each county that contains proposed critical habitat (as well as for each State and for the entire study area), is the U.S. Census Bureau's County Business Patterns. Data for the County Business Patterns excludes data on self-employed individuals, employees of private households, railroad employees, agricultural production employees, and most government employees. More information on these exclusions can be found at *http://www.census.gov/econ/cbp/methodology.htm.* While a certain amount of undercoverage may occur, we believe the data provide the best available information from a reliable source. The exhibits list the SIC and NAICS codes that were used to estimate industry employment, as well as the Web site where the data can be found (*http://censtats.census.gov*).

Comment (209): The Sierra Institute for Community and Environment report states active forest management occurs on National Park Service lands in Shasta County.

Our Response: We make note of this representation in the FEA.

Comment (210): The Sierra Institute for Community and Environment report disagrees with the results of Scenario 3 of the Federal lands analysis (described in Section 4.4.2.3 of the DEA). The authors state that the DEA bases its analysis of incremental changes in timber harvests on a period in which there is a severe downturn in the economy and wood products industry and that this results in an undercount of likely impacts. They state that the analysis ''relies on 5 years (2006 to 2010) of harvest data to base future timber harvests.'' In addition, they state that estimates of harvest totals are generalized and not linked to subunit timber harvest totals.

Our Response: The DEA and FEA rely on historical actual harvest data for USFS Region 6 because it represented the best available data for purposes of the analysis. For USFS Region 5, the analysis relies on projected actual timber harvests by forest, provided by USFS. For BLM lands, the FEA utilizes BLM-provided data on timber harvest projections by critical habitat subunit for three decades of incremental impact estimates, by land allocation type, forest conditions, and harvest type. To conduct the analysis, these various timber projections needed to be converted to board feet, per-acre, per-year measurements, by critical habitat subunit. In an ideal world, the FEA would utilize detailed geospatial data showing when and where Federal timber harvest is projected to occur. However, lacking data on the narrowly defined areas where timber harvest is projected to occur, and where critical habitat may have an incremental effect on these harvests, the analysis broadly applies projected timber harvest across all Federal lands. Using this approach, the FEA uses timber harvest projections ranging from 14 to more than 200 BF-per-acre per-year across critical habitat subunits, as described in Chapter 4. In sum, the FEA does not rely exclusively on historical data, and variable projected harvests are linked to specific subunits to the extent possible.

Comment (211): The Sierra Institute for Community and Environment questions the baseline timber harvest projection used in the DEA, stating that it fails to draw a distinction between dry and wet forests and those that are commercially viable and those that are not.

Our Response: As noted in the prior response, the economic analysis endeavors to distinguish potential future harvest levels by forest type and characterization, and by areas within each subunit, to the extent possible given the best available information.

Comment (212): The Sierra Institute for Community and Environment report claims that the DEA does not provide sufficient analysis of indirect incremental effects of the critical habitat designation on private landowners. To assess the effects of potential changes in Washington State regulations resulting from critical habitat designation, the authors suggest, ''There may not be adequate estimates of the probability or the total number of acres that could be included, but probabilistic models coupled with a sensitivity analysis could offer insight into the impact and are possible to develop'' (Sierra Report 2012, p. 13).

Our Response: Chapter 5 of the FEA provides a detailed discussion of the sources of the data required to quantify the potential indirect effects of the designation on private lands (see paragraphs 279 through 287), including the number of acres where landowners are likely to alter current timber management practices; the characteristics of the stands (type of tree, age, etc.) subject to changes in the timing of harvests; current and revised harvest schedules; financial models of the change in the present value of existing lands that incorporate information about stumpage prices, stand growth curves, and the opportunity cost of capital to private timber managers; and information regarding the probability that the Washington Forest Practices Board will undertake regulatory changes. Basic data are not available for most of these elements, and thus, information necessary to create distributions

describing these data elements and assumptions, which are required for probabilistic models, are scarce. Any distributions would likely be vague (for example, the probability of the Washington Forest Practices Board changing its regulations would range from zero to 100%, with an equal probability of any point in between these two endpoints). While it is technically possible to build a Monte Carlo-type probabilistic model using such vague probability distributions, the lack of data for meaningful inputs would render the results uninformative. We also note that private lands have been excluded from the final rule pursuant to section 4(b)(2) of the Act.

Comment (213): The Sierra Institute for Community and Environment report states that it is important for the DEA to quantify potential impacts of critical habitat designation on SRS and PILT payment programs. The authors state that it is not difficult to quantify the effects that future changes in timber harvests from Federal lands resulting from critical habitat designation would have on these payment programs. The authors also state that the analysis does not make clear that the revenue-sharing programs for Federal lands only continues if SRS is reauthorized after 2013.

Our Response: The Sierra Institute for Community and Environment is mistaken in its statement on page 14 of its report that the revenue-sharing programs for Federal lands only continue if SRS is reauthorized after 2013. It is true that if SRS is not reauthorized, the payments received by counties could be substantially different. However, as described in paragraphs 128 through 129 of the FEA, the U.S. Forest Service (USFS) 25% Fund and the Bureau of Land Management Oregon and California Land Grant (BLM O&C) Revenue-Sharing Payments (50 percent of commercial receipts) are permanently authorized by Congress and have dedicated funding sources in the form of commodity receipts. States and counties currently elect to receive SRS payments instead of revenue-sharing payments from the USFS 25% Fund and the BLM O&C Revenue-Sharing Program. In the absence of SRS (and possibly a second program called Payments in Lieu of Taxes, or PILT), the older programs would still be available and would serve as the sources of revenue-sharing payments.

Exhibit 3–9 in the FEA illustrates the relative magnitude of historical payments under all four programs, and Exhibit 3–10 provides information on percent of local government revenue that is made up of payments from these programs. Current SRS and PILT payments are based on historical revenue payments under preexisting programs and are allocated based on formulas considering a variety of factors. If these programs are re-authorized and funded, changes in revenues from Federal lands designated as critical habitat would first filter through the national allocation scheme and then through the State formulas, making it difficult to predict changes in payments. If these programs are not reauthorized and funded, then the payments would change each year based on a 7-year rolling average of receipts for USFS lands and the prior year's receipts for BLM O&C lands, and would also be filtered through the State's allocation formulas. Given the uncertainty associated with the future of SRS and PILT, the varying allocation schemes associated with the programs, and the relatively small change in anticipated harvests, the potential change in revenue-sharing payments is difficult to predict. Importantly, we note that the reauthorization and funding of SRS and PILT is unrelated to the decision to designate critical habitat for the northern spotted owl.

Environmental Analysis Comments

Comment (214): One commenter believed that the Secretary has not met the NEPA standard of full cooperation with State and county agencies in two different ways: (1) By setting a public comment timeframe that limits the agencies' ability to fully and knowingly provide comments; and (2) by denying the county the opportunity to be a cooperating agency under CEQ regulations and DOI policy.

Our Response: We believe the 30-day public comment period is adequate for review and comment on the draft environmental analysis and is consistent with the public comment period on many NEPA documents. In addition, we provided counties with an extended opportunity to comment, as described in Previous Federal Actions, above. With regard to cooperating agencies, neither CEQ nor DOI regulations discuss cooperating agencies in the context of environmental assessments because they are generally concise documents prepared to determine whether the proposed action will significantly affect the quality of the human environment and whether an environmental impact statement (EIS) is needed. Thus, environmental assessments normally do not warrant use of formally designated cooperating agencies. Because we initiated the NEPA analysis with an environmental assessment, we did not formally appoint any agency as a cooperating agency.

Comment (215): Several commenters requested the Service complete an environmental impact statement to address the effects of thinning, ecological forestry, and other active management activities on northern spotted owl populations. Commenters believe an EIS needs to be done for the critical habitat rule for a number of reasons, including that effects are significant; critical habitat designation could harm, rather than recover, the northern spotted owl; there is a need to accurately identify relevant environmental concerns and to take a ''hard look'' at these concerns; and the analysis in the draft environmental assessment is insufficient to prove effects are not significant (i.e., presents no information to justify a finding of no significant impact (FONSI)).

Our Response: This rulemaking is limited to the designation of critical habitat for the northern spotted owl. This final rule does not mandate or prescribe specific management activities, and the implementation of thinning, ecological forestry, or other types of activities is not required by this rulemaking. Should any such activities be proposed by the land management agencies when implementing specific projects on their managed lands, the only effect of this critical habitat rule is that Federal agencies will have to consult with the Service on their activities that may affect designated northern spotted owl critical habitat and ensure that their actions are not likely to destroy or adversely modify critical habitat, as those terms are used in section 7 of the Act. Our critical habitat proposal was fully compliant with NEPA, although we note that we elected to develop an environmental assessment pursuant to NEPA in this case entirely at our discretion, and not as a legal requirement. The proposal presented an overview of the state of the science on active management for consideration by land managers. It does not require any specific management actions. Any plans or project-level decisions concerning active forest management are appropriately made by land managers in accordance with their normal planning and project implementation procedures, and are beyond the authority of this rulemaking. Actions proposed on Federal lands must be consistent with the requirements of the NWFP and associated plans, and these plans have already undergone NEPA compliance. Step-down implementation of specific actions such as thinning projects on USFS or BLM lands also require NEPA compliance on a case-by-case basis.

Comment (216): One commenter stated that the barred owl EIS should not be a separate analysis document from the NEPA analysis done for the critical habitat rule, but that a single EIS should be prepared to address the entire proposal.

Our Response: The barred owl EIS represents an action entirely separate from the present critical habitat rulemaking, and is an evaluation of an experiment stemming from the recommendations of the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011). The Federal action requiring NEPA for the barred owl EIS is the issuance of a permit under the Migratory Bird Treaty Act for the scientific collection of barred owls, as well as additional permits that may be required for the experiment. In contrast, the designation of critical habitat is a statutory requirement under the Act, and is an entirely separate action from the issuance of necessary permits for research, take, or special use. We have addressed the barred owl EIS as an ongoing action in the cumulative effects analysis section of the environmental assessment of this rulemaking.

Comment (217): Commenters believed that the Draft Environmental Assessment is predecisional because it has committed to completing the NEPA process in a preordained timeline that does not allow sufficient time to meet the NEPA requirements of an EIS.

Our Response: An EIS is required only when an action is determined to have likelihood of significant impact on the human environment. Completion of an environmental assessment is a step in the NEPA process to determine whether or not impacts of the Federal action are significant and thus require an EIS. We have not predetermined the outcome of our environmental assessment. Rather, we have used the environmental assessment to establish whether or not impacts of the designation of critical habitat for the northern spotted owl are significant. Although there is a court-ordered schedule for completion of this critical habitat rule, if our environmental assessment had determined that impacts were significant, we would have sought an extension of time to complete our NEPA analysis. Our environmental analysis was consistent with the spirit and intent of NEPA, and was not predecisional. Further, our experience of evaluating the possible effects of critical habitat under NEPA suggested that an environmental assessment was the appropriate place to start.

Comment (218): One commenter described errors in public scoping in that we did not disclose our purpose and need during the scoping process.

Our Response: Public scoping is not required for the development of an environmental assessment. As stated in the environmental assessment, we used internal scoping (internal discussions among Service divisions regionally and nationally, and among staff with long-term experience with land-use activities conducted within critical habitat on Federal and non-Federal lands) to identify concerns, potential impacts, relevant effects of past actions, and possible alternative actions (October 15, 2008; FR 73 61292).

Comment (219): One commenter described several errors and inaccuracies in defining the purpose and need. Specifically: (1) The stated purpose of achieving the greatest conservation and recovery for the northern spotted owl is erroneous and more than required to meet the Act, and is also too narrow, overly restricting the range of reasonable alternatives; (2) the court-ordered due date of November 15 does not drive the need but rather the need is whatever was the Service's motivation in arranging the date with the court; and (3) the purpose of complying with the Act is not a purpose but an agency duty.

Our Response: Regarding item number 1, the commenter only partially described the purpose. The full purpose stated in the draft environmental assessment was to ''achieve the greatest relative conservation and recovery goals for the northern spotted owl but simultaneously minimize effects to other land and resources uses.'' We disagree that the purpose, as a whole, is more than required to meet the Act. Rather, our intent is to designate lands meeting the definition of critical habitat (i.e., areas occupied at the time of listing that contain the features essential to the species' conservation or unoccupied areas that are themselves essential to the species' conservation), determining what is essential in a way that minimizes effects on resource uses to the extent possible, and then using the exclusion process provided by section 4(b)(2) of the Act to weigh the benefits of inclusion versus the benefits of exclusion. This is what we mean by using the term ''relative.'' This balance does not result in more action than is required to meet the provisions of the Act, and we have clarified this in the environmental assessment. Regarding item number 2, we did not mean to imply that the court deadline drives the need. The need is to revise critical habitat pursuant to a court-ordered remand of the 2008 designation (Carpenters' Industrial Council (CIC) v. Salazar, 734 F. Supp. 2d126 (D.D.C. 2010) * * *); we have clarified this point in the final environmental assessment, available at *http://www.regulations.gov* and at *http://www.fws.gov/oregonfwo/Species/Data/NorthernSpottedOwl/CriticalHabitat/default.asp.* Regarding item number 3, the purpose of an action proposed by the Service or any other Federal agency, based on common NEPA practice and Federal NEPA guidance includes but is not limited to statutory authority. The Service cannot carry out an action that is inconsistent with our authorities, hence our purpose explicitly included reference to those authorities.

Comment (220): One commenter believed there was an inadequate range of alternatives. Furthermore, they believed that the alternatives the Service noted in the draft environmental assessment as considered but not fully developed were not fully considered because there was no environmental review of these alternatives.

Our Response: NEPA requires that we must analyze those alternatives necessary to permit a reasoned choice (40 CFR 1502.14). When there are potentially a very large number of alternatives, NEPA requires that we analyze only a reasonable number to cover the full spectrum of alternatives that are consistent with the purpose and need. We did consider but excluded some modeling outcomes from further analysis. NEPA allows the elimination of an action alternative from detailed analysis for a variety of reasons including ineffectiveness, technical or economic infeasibility, inconsistency with management objectives of the area, remote or speculative implementation, and substantial similarity in design and effects of an alternative that has been analyzed. We disagree with the commenter in that NEPA does not require an ''environmental review'' of alternatives eliminated from detailed study, but rather, a brief discussion of the reasons for their having been eliminated (40 CFR 1502.16(a)). We have further clarified our reasons for eliminating these alternatives from further analysis in the final NEPA document.

Comment (221): One commenter believed we did not adequately identify the range of issues that could be affected by critical habitat designation. They further pointed out that limiting our analysis to threatened and endangered species and stating in the environmental assessment that it is not possible to analyze effects on the other 1,200 species is wrong because it is possible and has been done for such actions as the NWFP.

Our Response: Only potentially significant issues must be the focus of the environmental analysis. Issues that are not significant (i.e., related to potentially significant effects) can be eliminated from detailed study, ''narrowing the discussion of these issues in the statement to a brief presentation of why they will not have a significant effect on the human environment.'' (40 CFR 1501.7(a)(2), 40 CFR 1501.7(a)(3)). We have further elaborated in the final environmental assessment (available at *www.regulations.gov* and at *http://www.fws.gov/oregonfwo/Species/Data/NorthernSpottedOwl/CriticalHabitat/default.asp*) why we found that these issues will not have a significant effect on the human environment. Regarding our statement that it is not possible to analyze effects on 1,200 species given that such an analysis was done in the NWFP, we agree this was in error and will remove that language from the final environmental assessment. However, we do not find that this impels us to analyze effects on all 1,200 late-successional species. In the case of the NWFP, the intent of the revision to USFS and BLM land management plans was to provide comprehensive management of habitat for late-successional and old-growth forest species. Thus, it was prudent to examine those species as part of the NWFP analysis. We do not believe that such a level of analysis is necessary for this purpose and have thus limited our analysis to effects on listed species to ensure critical habitat designation does not reduce their potential for recovery.

Comment (222): Three commenters believed the analysis failed to disclose that current habitat set-asides have not produced measurable success in northern spotted owl recovery, and that expanding critical habitat will also fail because barred owls are the primary causal factor in the northern spotted owl decline. On a related topic, one commenter felt the environmental assessment failed to describe how the proposed action would lead to recovery and why other alternatives would not.

Our Response: Threats to northern spotted owls are described in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) as habitat loss and competition from the barred owl. We acknowledge in this rule and the final environmental assessment that we need to address both of these threats if we are to recover the northern spotted owl. As to the need to describe how the proposed action would lead to recovery while other alternatives would not, we do not need to show that alternatives not chosen would not lead to recovery; we merely need to disclose the effects of each alternative on the relevant issues, in this case, primarily northern spotted owl populations, to provide information to decisionmakers. Recovery of northern spotted owls will require addressing multiple issues, of which habitat loss is only one and will be partly addressed through critical habitat designation.

Comment (223): One commenter noted we did not analyze the effects of eliminating LSRs as part of the critical habitat designation.

Our Response: This comment is based on a misunderstanding of the critical habitat designation, which does not eliminate the Late-Successional Reserve Network of the Northwest Forest Plan.

Comment (224): One commenter believed we failed to fully disclose the existing regulatory structure, and also failed to fully disclose the disincentives to landowners to retain habitat, resulting in the potential elimination of northern spotted owl habitat.

Our Response: We noted in the draft environmental assessment the potential for landowners to prematurely harvest existing habitat, maintain shorter harvest rotations, or change from forest management to development. We received several comments from landowners indicating their intention to deforest their property if designated as critical habitat. We acknowledge that possibility for some landowners in the final environmental assessment (available at *www.regulations.gov* and at *http://www.fws.gov/oregonfwo/Species/Data/NorthernSpottedOwl/CriticalHabitat/default.asp*) based on these comments, but cannot describe the extent or degree of these effects based on the comments we received. We also note that, in our preferred alternative, all private lands were excluded from this designation.

Comment (225): One commenter disagreed with what effects we considered speculative and not reasonably foreseeable, and believed we are obligated to display environmental consequences of potential effects even if actual outcomes are unknown.

Our Response: DOI NEPA regulations define reasonably foreseeable future action as, ''activities not yet undertaken, but sufficiently likely to occur, that a Responsible Official of ordinary prudence would take such activities into account in reaching a decision. These Federal and non-Federal activities that must be taken into account include, but are not limited to, activities for which there are existing decisions, funding, or proposals identified by the bureau. Reasonably foreseeable future actions do not include those actions that are highly speculative or indefinite.'' 43 CFR 46.30. We contend that the actions we consider not reasonably foreseeable meet this definition.

Comment (226): Two commenters indicated we failed to examine cumulative and connected actions in an economic and social context.

Our Response: We have completed an economic analysis that addresses economic and social aspects of the designation of critical habitat. In addition, the Council on Environmental Quality's implementing regulations indicate that economic and social effects are not by themselves intended to require preparation of an EIS, but should be considered if an EIS is prepared (40 CFR 1508.14). Our purpose in preparing an environmental assessment was to determine whether an EIS should be prepared. Because we determined that the critical habitat revision resulted in a finding of no significant impact (FONSI), it was determined that an EIS was not necessary to evaluate social and economic impacts.

Comment (227): One commenter noted we failed to analyze the economic effects of the northern spotted owl listing decision as a cumulative and connected action of critical habitat designation.

Our Response: We agree that the environmental assessment should consider all relevant cumulative effects, which may include the effects of past actions, as necessary to determine whether a finding of no significant impact is warranted. One element of that determination is ''[w]hether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.'' 40 CFR 1508.27(b)(7). As discussed in the previous comment, ''human environment'' is defined to include the natural and physical environment and the relationship of people with that environment except that economic or social effects are not intended by themselves to require preparation of an environmental impact statement. 40 CFR 1508.14. In this environmental assessment we have considered the potential effects of the designation added to other past, present, and reasonably foreseeable future actions that would affect the identified resources of concern to determine whether this would result in significant

impacts to the human environment as defined for purposes of an environmental assessment. We have added the past action of listing the northern spotted owl to our cumulative effects analysis and considered those effects on the resources of concern identified in the environmental assessment.

Comment (228): One commenter contended that just because future action will undergo NEPA analysis does not relieve the Service of its NEPA duty to analyze the effects of the critical habitat proposal.

Our Response: We can analyze the indirect effects of the critical habitat designation only to the degree that we are reasonably certain of the actions that may occur within critical habitat, how they might be modified as a result of the section 7 process, and what the environmental impacts of those modifications might be. To that end, we have met our NEPA obligation. As individual Federal actions are developed with more information on location, activity type, magnitude, duration, and intensity, all things we cannot assess at this point in time, those actions will be subject to NEPA and analyzed in further detail.

Comment (229): One commenter believed it was incorrect for the Service to assume agencies will implement 100% of actions in the recovery plan [Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011)] and that we must assume agencies will implement NWFP requirements without further matrix restrictions.

Our Response: We have included as part of our range of possible outcomes the possibility that agencies will implement only the NWFP requirements, without implementing any additional recovery plan actions that may restrict actions in the matrix. However, we believe that is not the only possible scenario, given that we have examples of agencies implementing discretionary actions from the northern spotted owl recovery actions that are in addition to the Standards and Guidelines of the NWFP.

XIII. Required Determinations

Regulatory Planning and Review (Executive Orders 12866 and 13563)

Executive Order 12866 provides that the Office of Information and Regulatory Affairs (OIRA) will review all significant rules. The Office of Information and Regulatory Affairs has determined that this rule is significant because it will raise novel legal or policy issues.

Executive Order 13563 reaffirms the principles of E.O. 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O. 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this rule in a manner consistent with these requirements.

Regulatory Flexibility Act (5 U.S.C. 601 et seq.)

Under the Regulatory Flexibility Act (RFA; 5 U.S.C. 601 *et seq.*) as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996 (5 U.S.C. 801 *et seq.*), whenever an agency must publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the RFA to require Federal agencies to provide a certification statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities.

According to the Small Business Administration, small entities include small organizations such as independent nonprofit organizations; small governmental jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents; and small businesses (13 CFR 121.201). Small businesses include manufacturing and mining concerns with fewer than 500 employees, wholesale trade entities with fewer than 100 employees, retail and service businesses with less than $5 million in annual sales, general and heavy construction businesses with less than $27.5 million in annual business, special trade contractors doing less than $11.5 million in annual business, and forestry and logging operations with fewer than 500 employees and annual business less than $7 million. To determine if potential economic impacts to small entities may result from this designation, and whether these potential impacts may be significant, we considered the types of activities that might trigger regulatory impacts under this designation as well as types of project modifications that may result. In general, the term ''significant economic impact'' is meant to apply to a typical small business firm's business operations.

The Service's current understanding of recent case law is that Federal agencies are only required to evaluate the potential impacts of rulemaking on those entities directly regulated by the rulemaking; therefore, they are not required to evaluate the potential impacts to those entities not directly regulated. The designation of critical habitat for an endangered or threatened species only has a regulatory effect where a Federal action agency is involved in a particular action that may affect the designated critical habitat. Under these circumstances, only the Federal action agency is directly regulated by the designation, and, therefore, consistent with the Service's current interpretation of RFA and recent case law, the Service may limit its evaluation of the potential impacts to those identified for Federal action agencies. Under this interpretation, there is no requirement under the RFA to evaluate the potential impacts to entities not directly regulated, such as small businesses. However, E.O.'s 12866 and 13563 direct Federal agencies to assess costs and benefits of available regulatory alternatives in quantitative (to the extent feasible) and qualitative terms. Consequently, it is the current practice of the Service to assess to the extent practicable these potential impacts if sufficient data are available, whether or not this analysis is believed by the Service to be strictly required by the RFA. In other words, while the effects analysis required under the RFA is limited to entities directly regulated by the rulemaking, the effects analysis under the Act, consistent with the E.O. regulatory analysis requirements, can take into consideration impacts to both directly and indirectly impacted entities, where practicable and reasonable.

We acknowledge that in some cases, third-party proponents of the action subject to permitting or funding, though not directly regulated, may participate in a section 7 consultation with the Federal action agency. Moreover, E.O.'s 12866 and 13563 direct Federal agencies to assess all costs and benefits of available regulatory alternatives in quantitative (to the extent feasible) and

qualitative terms. We believe it is good policy to assess these impacts if we have sufficient data before us to complete the necessary analysis, whether or not this analysis is strictly required by the RFA. While the Service does not consider this regulation to directly regulate these entities, in our draft economic analysis, we have conducted an evaluation of the potential number of third parties participating in consultations on an annual basis in order to ensure a more complete examination of the potential incremental effects of this rule in the context of the RFA. As discussed earlier in our March 8, 2012, proposed rule (77 FR 14062), our notice of availability of the draft economic analysis (77FR 32483; June 1, 2012), and in the draft economic analysis itself, we determined that the incremental effects of this revised designation are relatively small due to the extensive conservation measures already in place for the species, due to its being listed under the Act, and because of measures provided under the NWFP and other conservation programs. The FEA affirms these conclusions, and we have determined that these conclusions are applicable to this final revised designation of critical habitat for the northern spotted owl. Thus, even taking into account those entities not directly regulated, we certify that the revised designation of critical habitat for the northern spotted owl will not have a significant economic impact on a substantial number of small entities.

Importantly, the incremental regulatory and economic impacts of the rule must be *both* significant and substantial to prevent certification of the rule under the RFA and to require the preparation of a regulatory flexibility analysis. If a substantial number of small entities are affected by the critical habitat designation, but the per-entity economic impact is not significant, the Service may certify. Likewise, if the per-entity economic impact is likely to be significant, but the number of affected entities is not substantial, the Service may also certify. Because per-entity impacts are currently uncertain, our evaluation focused on the number of small entities potentially affected as third parties to consultation with Federal agencies that may be directly regulated by the designation

While developing our draft economic analysis (DEA), we determined that there may be third-party participants to consultations involved with timber harvest and linear projects. In estimating the potential number of entities involved with consultations on timber harvest, we used the projection of 1,000 consultations over the 20-year time horizon of the DEA related to timber harvest management, providing an assumption of 50 consultations per year. We predict that many of these consultations will not involve third parties, but data is lacking about third-party participation rates. For the sake of our evaluation, we took a more inclusive approach and assumed that third parties are involved with these consultations and that each party is a small entity, providing an annual estimate of 50 small entities that may be involved over the 20-year time horizon of the study. This is likely an overestimate of the number of third parties involved with timber management consultations and therefore an even greater overestimate of the number of small entities involved because many of those third parties will not be small entities. The DEA further explored the projection of small businesses in timber-related sectors in the geographic areas overlapping the critical habitat designation, which differed depending on the specific data sets used, either 7,140 entities or 2,616 entities. Using our conservative estimate of 50 small entities involved annually, the proportion of entities in the timber harvest management sector potentially impacted by the designation would be 0.70 percent and 1.9 percent, respectively, over the 20-year time horizon of the study.

The RFA does not explicitly define the specific proportion of any given sector that would represent a substantial number, but leave that determination to the discretion of the agency issuing the regulation. While the Service or the Department of Interior does not have a specific policy concerning what proportion of any given sector impacted would represent a substantial number, the Service, as a matter of practice, uses a value of 3% to evaluate whether the regulation may impact a substantial number. In other words, if a regulation is determined to have an impact on less than 3% of entities in a given sector, then the agency makes a determination that a substantial number is not affected. Whereas, if it is determined that the proportion of entities impacted by a given regulation is equal to or greater than 3%, then the agency further evaluates available data to make a specific determination for that regulation.

Applying the aforementioned criteria to the specific proportion of the timber harvest management sector, we have concluded that these proportions do not represent a substantial number of small business entities potentially affected in the timber harvest management sector. Please refer to Appendix A of the FEA for further details of our evaluation.

Next, we explored the potential impact to third parties that may be involved with consultations related to linear projects (i.e., roads, pipelines, and powerlines). On the basis of similar conservative assumptions explained in the DEA, we concluded that there may be a total of 11 projects in a given year that may involve third parties. If we similarly assume that each of these parties represent small entities, then we estimate that 11 small entities in a given year could be impacted by the designation. While there is greater uncertainty as to the number of small entities involved with linear projects, we believe that the relative proportion these 11 entities represent is unlikely to constitute a substantial number. Further, the projected impacts to third parties resulting from the consultations on linear projects are anticipated to be solely administrative in nature. Thus, even with the uncertainty as to whether the proportion of entities potentially effected is may be substantial (although we think that it is not), we have determined that the potential impacts to these entities would not be significant as they would only be the result of additional administrative costs, which are relatively minor. Therefore, based on our conservative estimates in identifying third parties in this sector that potentially may be impacted, the projected number of entities and types of impacts, we concluded that the designation would not result in a significant impact to a substantial number of small business entities in this sector.

These conclusions were reaffirmed in our FEA. Please refer to Appendix A of the FEA for further details of our evaluation. In development of the final economic analysis (FEA) and taking into consideration all information and comments received, and based on our conservative evaluation of the number of entities in the timber management and linear project sectors potentially impacted, the proportion of the affected entities to those representing the sector in the study area, and the types of impacts, we again determined that the revised critical habitat designation will not have a significant economic impact on a substantial number of small business entities. In Appendix A of the FEA, we acknowledge that the primary economic impact of the project modifications resulting from the consultations described above is a change in Federal revenues generated by timber sales. In other words, if harvests are increased or decreased as a result of the designation, the USFS and BLM will

receive more or less revenues, respectively, from the sale of this timber. However, these Federal agencies are not, as noted, small businesses. Furthermore, entities bidding for new timber sales on Federal lands would not incur costs as a result of this critical habitat designation because they will only pay for the value of the sale after any modifications are made as part of the section 7 consultation process. In other words, any impact of this regulation on those entities would be indirect.

In the FEA, we evaluated the potential indirect economic effects on small business entities resulting from conservation actions related to the listing of the northern spotted owl and the designation of critical habitat. The analysis is based on the estimated impacts associated with the rulemaking, as described in Chapters 4 through 8 and Appendix A of the analysis, and evaluates the potential for economic impacts related to: (1) Timber management, (2) barred owl management, (3) northern spotted owl surveys and monitoring, (4) fire management, (5) linear projects (i.e., roads, pipelines, and powerlines), (6) restoration, (7) recreation, and (8) administrative costs associated with consultations under section 7 of the Act.

With respect to Federal lands, consultations with Federal land managers, the Service, and other experts indicate varying opinions regarding potential critical habitat effects on timber management practices, and noted the difficulty and limitations of deriving precise measures of positive or negative incremental change. Therefore, the FEA considered three alternative scenarios, which are described in Chapter 4 and summarized in Exhibit ES–4 of the FEA. These scenarios include: (1) Administrative costs only; (2) potential positive incremental impacts to timber harvest on Federal lands; and (3) potential negative incremental impacts to timber harvest on Federal lands. Furthermore, the economic analysis presents a potential low impact and high impact outcome for each of the three scenarios. Thus under the positive impact scenario, the estimated annualized *increase* in timber harvest revenue on Federal lands range from $1,230,000 to $3,070,000. Under the negative impact scenario, the annualized *decrease* in timber harvest revenue on Federal lands ranges $2,460,000 to $614,000,000. In all three scenarios, the estimated annualized administrative costs on Federal lands are from $185,000 to $316,000.

In response to public comment, a sensitivity analysis was performed on the baseline timber harvest projections, to better inform the alternative impact scenarios in the FEA. The economic analysis uses a baseline harvest projection of approximately 122.80 million board feet (MMBF) per year. In the sensitivity analyses, the baseline timber harvest projection increases by up to an additional 27.99 MMBF per year. Therefore, the range of incremental impacts to Federal timber harvest widens from a potential increase in stumpage value of $3,580,000 (under the increased timber harvest scenario) to a potential decrease of $7,860,000 (under the decreased timber harvest scenario) per year.

In addition, Exhibit ES–4 of the FEA presents our qualitative conclusions concerning potential timber harvest impacts to private lands, and notes that there may be possible negative impacts associated with regulatory uncertainty, and new regulation in the State of Washington, and concludes that zero timber harvest impacts are likely to occur on State lands. Finally, Exhibit ES–4 notes the potential incremental administrative costs related to linear projects, which are estimated to be between $10,800 on the low end and $19,500 on the high end.

The FEA also confirms our conclusion that between less than one percent and two percent of potentially effected small entities in the 56 county study area may participate as third parties in section 7 consultations related to timber harvests on an annual basis. In addition, approximately 11 electricity transmission or natural gas pipeline companies may participate in section 7 consultations in a given year. While we believe that this number does not represent a significant proportion of entities in this sector, the impacts to these entities are expected not to be significant as they are anticipated to be solely administrative in nature.

The FEA also explains that these estimates almost certainly overstate rather than understate the number of affected entities, perhaps to a significant degree, because: (1) Not all section 7 consultations will involve a third party; (2) not all third parties will be small entities; and (3) the same entity may consult more than once in a single year. We have also constrained the population of potentially affected entities to those found in counties overlapping critical habitat, as opposed to including others within the States of Washington, Oregon, and California. In addition, as described elsewhere in this rule, the greatest impact of section 7 will likely occur in unoccupied habitat, due to the fact that consultation would already occur in occupied habitat due to the presence of the listed species. We estimate that the vast majority of the areas being designated in this rule were occupied at the time of listing.

Finally, our analysis of potential impacts to small entities is overestimated because it was based on the proposed designation, which has been reduced by 4,197,484 ac (1,697,903 ha) in this final rule. Designated Federal lands are reduced by 2,849,745 ac (1,151,297 ha) due to the elimination of lands that we have determined do not meet the definition of critical habitat, the exemption of DOD lands under section 4(a)(3) of the Act, and the exclusion of Congressionally-reserved lands under section 4(b)(2) of the Act. Designated State and private lands are reduced by 1,647,170 ac (665,843 ha) due to the elimination of some lands that do not meet the definition of critical habitat and the exclusion of State parks and private lands under section 4(b)(2) of the Act.

In summary, we considered whether this designation would result in a significant economic impact on a substantial number of small entities. Based on the above reasoning, relevant case law, and currently available information, we concluded that this rule will not result in a significant economic impact on a substantial number of small entities. We are reaffirming our certification that this revised designation of critical habitat for the northern spotted owl will not have a significant economic impact on a substantial number of small entities, and a regulatory flexibility analysis is not required.

Energy Supply, Distribution, or Use (Executive Order 13211)

Executive Order 13211 (Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use) requires agencies to prepare Statements of Energy Effects when undertaking certain actions. While this final rule to designate revised critical habitat for the northern spotted owl is a significant regulatory action under Executive Order 12866, it is not expected to significantly affect energy supplies, distribution, or use. Therefore, this action is not a significant energy action, and no Statement of Energy Effects is required.

Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 *et seq.*), we make the following findings:

(1) This rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation,

statute, or regulation that would impose an enforceable duty upon State, local, or Indian governments, or the private sector, and includes both ''Federal intergovernmental mandates'' and ''Federal private sector mandates.'' These terms are defined in 2 U.S.C. 658(5)–(7). ''Federal intergovernmental mandate'' includes a regulation that ''would impose an enforceable duty upon State, local, or Indian governments'' with two exceptions. It excludes ''a condition of Federal assistance.'' It also excludes ''a duty arising from participation in a voluntary Federal program,'' unless the regulation ''relates to a then-existing Federal program under which $500,000,000 or more is provided annually to State, local, and Indian governments under entitlement authority,'' if the provision would ''increase the stringency of conditions of assistance'' or ''place caps upon, or otherwise decrease, the Federal Government's responsibility to provide funding,'' and the State, local, or Indian governments ''lack authority'' to adjust accordingly. At the time of enactment, these entitlement programs were: Medicaid; Aid to Families with Dependent Children work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. ''Federal private sector mandate'' includes a regulation that ''would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program.''

The designation of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act would not apply, nor would critical habitat shift the costs of the large entitlement programs listed above onto State governments.

(2) We have determined that this rule will not significantly or uniquely affect small governments because the designation of critical habitat imposes no obligations on State or local governments. By definition, Federal agencies are not considered small entities, although the activities they fund or permit may be proposed or carried out by small entities. Consequently, we do not believe that the critical habitat designation would significantly or uniquely affect small government entities. As such, a Small Government Agency Plan is not required. Further, it will not produce a Federal mandate of $100 million or greater in any year, that is, it is not a ''significant regulatory action'' under the Unfunded Mandates Reform Act.

Takings (Executive Order 12630)

In accordance with Executive Order 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), we have analyzed the potential takings implications of designating critical habitat for the northern spotted owl in a takings implications assessment. As discussed above, the designation of critical habitat affects only Federal actions. Although private parties that receive Federal funding or assistance or require approval or authorization from a Federal agency for an action may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. The takings implications assessment concludes that this designation of critical habitat for the northern spotted owl does not pose significant takings implications for lands within or affected by the designation.

Federalism (Executive Order 13132)

In accordance with Executive Order 13132 (Federalism), we have determined that this rule does not have direct federalism implications that would require a federalism summary impact statement; however, we are aware of the State-level interest in this rule, and we both summarize below and explain in more detail in other parts of this package activities and responsibilities on Federal, State, and private lands.

From a federalism perspective, the designation of critical habitat directly affects only the responsibilities of Federal agencies. As explained in detail earlier, section 7(a)(2) of the Act requires Federal agencies—and only Federal agencies—to ensure that the actions they authorize, fund, or carry out are not likely to destroy or adversely modify critical habitat. The Act imposes no other duties with respect to critical habitat, either for States and local governments, or for anyone else. As a result, the rule does not have substantial direct effects either on the States, or on the relationship between the national government and the States, or on the distribution of powers and responsibilities among the various levels of government. However, in keeping with Department of the Interior and Department of Commerce policy and the federalism principles set forth in Executive Order 13132, we requested information from, and coordinated development of, this revised critical habitat designation with appropriate State resource agencies in Washington, Oregon, and California, on the effects of revised designation of critical habitat. We received comments from the Washington State Department of Natural Resources, Washington Department of Fish and Wildlife, Oregon Department of Forestry, the State of Oregon, and California Department of Forestry and Fire Protection (CALFIRE), as discussed in the Summary of Comments and Responses section of the rule, above. In addition, we received comments from the following counties:

- Washington: Jefferson County, Klickitat County, Skamania County, and Skagit County;
- Oregon: Hood River County, Jackson County, Linn County, Douglas County, and the Association of O&C Counties; and
- California: Del Norte County, Tehama County, Regional Council of Rural Counties, Siskiyou County, and Trinity County.

We used this information to more thoroughly evaluate the probable economic and regulatory effects of the proposed designation in our final economic analysis, to inform the development of our final rule, and to consider the appropriateness of excluding specific areas from the final rule. We found that the revised designation of critical habitat for the northern spotted owl has little incremental impact on State and local governments and their activities.

The revision of critical habitat also is not expected to have substantial indirect impacts. As explained in more detail above, activities within the areas proposed to be designated as critical habitat are already subject to a broad range of requirements, including: (1) The various requirements of the Northwest Forest Plan, including those

applicable to its Late-successional Reserves, Riparian Reserves, and ''survey and manage'' restrictions; (2) the prohibition against ''taking'' northern spotted owls under sections 4(d) and 9 of the Act; (3) the prohibition against Federal agency actions that jeopardize the continued existence of the northern spotted owl under section 7(a)(2) of the Act; (4) the prohibition against taking other federally listed species that occur in the area of the designated critical habitat (e.g., salmon, bull trout, and marbled murrelets); and (5) the prohibition against Federal agency actions that jeopardize the continued existence of such other listed species. All of these requirements are currently in effect and will remain in effect after the final revision of critical habitat.

Some indirect impacts of the rule on States are, of course, possible. Section 7(a)(2) of the Act requires Federal agencies (action agencies) to consult with the Service whenever activities that they undertake, authorize, permit, or fund may affect a listed species or designated critical habitat. States or local governments may be indirectly affected if they require Federal funds or formal approval or authorization from a Federal agency as a prerequisite to conducting an action. In such instances, while the primary consulting parties are the Service and the Federal action agency, State and local governments may also participate in section 7 consultation as an applicant. It is therefore possible that States may be required to change project designs, operation, or management of activities taking place within the boundaries of the designation in order to receive Federal funding, assistance, permits, approval, or authorization from a Federal agency. Also, to the extent that the designation of critical habitat affects timber harvest amounts on Federal land, county governments that receive a share of the receipts from such harvests may be affected. However, while non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency.

On the other hand, the designation of critical habitat will likely have some benefit to State and local governments because the areas that contain the physical or biological features essential to the conservation of the species are more clearly defined, and the elements of the features of the habitat necessary to the conservation of the species are specifically identified. It may also assist local governments in long-range planning (rather than having them wait for case-by-case section 7 consultations to occur).

Civil Justice Reform (Executive Order 12988)

In accordance with Executive Order 12988 (Civil Justice Reform), the Office of the Solicitor has determined that the rule does not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the Order. We have revised critical habitat in accordance with the provisions of the Act. To assist the public in understanding the habitat needs of the species, the rule identifies the elements of physical or biological features essential to the conservation of the species. The designated areas of critical habitat are presented on maps, and the rule provides several options for the interested public to obtain more detailed location information, if desired.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

This rule does not contain any new collections of information that require approval by OMB under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*). This rule will not impose recordkeeping or reporting requirements on State or local governments, individuals, businesses, or organizations. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act (42 U.S.C. 4321 et seq.)

It is our position that, outside the jurisdiction of the U.S. Court of Appeals for the Tenth Circuit, we do not need to prepare environmental analyses pursuant to the National Environmental Policy Act (NEPA), 42 U.S.C. 4321 *et seq.,* in connection with designating critical habitat under the Act for the reasons outlined in a notice published in the **Federal Register** on October 25, 1983 (48 FR 49244). This position was upheld by the U.S. Court of Appeals for the Ninth Circuit (in a challenge to the first rulemaking designating critical habitat for the northern spotted owl. *Douglas County* v. *Babbitt,* 48 F.3d 1495 (9th Cir. 1995), cert. denied 516 U.S. 1042 (1996)).

However, at our discretion, we undertook an environmental assessment for this revised critical habitat designation, and notified the public of the availability of the draft environmental assessment for the proposed rule, for review and comment. We took all substantive comments into consideration, both to make revisions or corrections in the environmental assessment, and in the decisionmaking process made in finalizing the determination. In our final environmental assessment, we were able to make a finding of no significant impact (FONSI) from this rulemaking action. The final environmental assessment is available at *www.regulations.gov* and at *http://www.fws.gov/oregonfwo/Species/Data/NorthernSpottedOwl/CriticalHabitat/default.asp.*

Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175, ''Consultation and Coordination with Indian Tribal Governments'' (November 6, 2000, and as reaffirmed November 5, 2009), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. The United States recognizes the right of Indian tribes to self-government and supports tribal sovereignty and self-determination, and recognizes the need to consult with tribal officials when developing regulations that have tribal implications. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with tribes in developing programs for healthy ecosystems, to acknowledge that Indian lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to tribes. Even though we have determined that there are no Indian lands that meet the definition of critical habitat for the northern spotted owl, and therefore no Indian lands are included in this designation, we will continue to coordinate and consult with tribes regarding resources within the revised designation that are of cultural significance to them.

XIV. References Cited

A complete list of references cited in this rulemaking is available on the Internet at *http://www.regulations.gov* and upon request from the Oregon Fish

and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this package are the staff members of the Oregon Fish and Wildlife Office.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

■ 1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500; unless otherwise noted.

■ 2. Amend § 17.95(b) by revising the critical habitat entry for ''Northern Spotted Owl *(Strix occidentalis caurina)*'' to read as follows:

§ 17.95 Critical habitat—fish and wildlife.

* * * * *

(b) *Birds.*

* * * * *

Northern Spotted Owl *(Strix occidentalis caurina)*

(1) Critical habitat units are depicted for the States of Washington, Oregon, and California on the maps below.

(2) Critical habitat for the northern spotted owl includes the following four primary constituent elements set forth in paragraph (2)(i) (primary constituent element 1) through paragraph (2)(iv) (primary constituent element 4) of this entry. Each critical habitat unit must include primary constituent element 1 and primary constituent element 2, 3, or 4:

(i) Primary constituent element 1: Forest types that may be in early-, mid-, or late-seral stages and that support the northern spotted owl across its geographical range. These forest types are primarily:

(A) Sitka spruce;

(B) Western hemlock;

(C) Mixed conifer and mixed evergreen;

(D) Grand fir;

(E) Pacific silver fir;

(F) Douglas-fir;

(G) White fir;

(H) Shasta red fir;

(I) Redwood/Douglas-fir (in coastal California and southwestern Oregon); and

(J) The moist end of the ponderosa pine coniferous forest zones at elevations up to approximately 3,000 ft (900 m) near the northern edge of the range and up to approximately 6,000 ft (1,800 m) at the southern edge.

(ii) Primary constituent element 2: Habitat that provides for nesting and roosting. In many cases the same habitat also provides for foraging (primary constituent element (3)). Nesting and roosting habitat provides structural features for nesting, protection from adverse weather conditions, and cover to reduce predation risks for adults and young. This primary constituent element is found throughout the geographical range of the northern spotted owl, because stand structures at nest sites tend to vary little across the northern spotted owl's range. These habitats must provide:

(A) Sufficient foraging habitat to meet the home range needs of territorial pairs of northern spotted owls throughout the year; and

(B) Stands for nesting and roosting that are generally characterized by:

(1) Moderate to high canopy cover (60 to over 80 percent).

(2) Multilayered, multispecies canopies with large (20–30 inches (in) (51–76 centimeters (cm)) or greater diameter at breast height (dbh)) overstory trees.

(3) High basal area (greater than 240 ft^2/acre; 55 m^2/ha).

(4) High diversity of different diameters of trees.

(5) High incidence of large live trees with various deformities (e.g., large cavities, broken tops, mistletoe infections, and other evidence of decadence).

(6) Large snags and large accumulations of fallen trees and other woody debris on the ground.

(7) Sufficient open space below the canopy for northern spotted owls to fly.

(iii) Primary constituent element 3: Habitat that provides for foraging, which varies widely across the northern spotted owl's range, in accordance with ecological conditions and disturbance regimes that influence vegetation structure and prey species distributions. Across most of the owl's range, nesting and roosting habitat is also foraging habitat, but in some regions northern spotted owls may additionally use other habitat types for foraging as well. The foraging habitat PCEs for the four ecological zones within the geographical range of the northern spotted owl are generally the following:

(A) *West Cascades/Coast Ranges of Oregon and Washington.*

(1) Stands of nesting and roosting habitat; additionally, owls may use younger forests with some structural characteristics (legacy features) of old forests, hardwood forest patches, and edges between old forest and hardwoods.

(2) Moderate to high canopy cover (60 to over 80 percent).

(3) A diversity of tree diameters and heights.

(4) Increasing density of trees greater than or equal to 31 in (80 cm) dbh increases foraging habitat quality (especially above 12 trees per ac (30 trees per ha)).

(5) Increasing density of trees 20 to 31 in (51 to 80 cm) dbh increases foraging habitat quality (especially above 24 trees per ac (60 trees per ha)).

(6) Increasing snag basal area, snag volume (the product of snag diameter, height, estimated top diameter, and including a taper function), and density of snags greater than 20 in (50 cm) dbh all contribute to increasing foraging habitat quality, especially above 10 snags/ha.

(7) Large accumulations of fallen trees and other woody debris on the ground.

(8) Sufficient open space below the canopy for northern spotted owls to fly.

(B) *East Cascades.*

(1) Stands of nesting and roosting habitat.

(2) Stands composed of Douglas-fir and white fir/Douglas-fir mix.

(3) Mean tree size (quadratic mean diameter greater than 16.5 in (42 cm)).

(4) Increasing density of large trees (greater than 26 in (66 cm)) and increasing basal area (the cross-sectional area of tree boles measured at breast height), which increases foraging habitat quality.

(5) Large accumulations of fallen trees and other woody debris on the ground.

(6) Sufficient open space below the canopy for northern spotted owls to fly.

(C) *Klamath and Northern California Interior Coast Ranges.*

(1) Stands of nesting and roosting habitat; in addition, other forest types with mature and old-forest characteristics.

(2) Presence of conifer species such as incense-cedar, sugar pine, and Douglas-fir and hardwood species such as bigleaf maple, black oak, live oaks, and madrone, as well as shrubs.

(3) Forest patches within riparian zones of low-order streams and edges between conifer and hardwood forest stands.

(4) Brushy openings and dense young stands or low-density forest patches within a mosaic of mature and older forest habitat.

(5) High canopy cover (87 percent at frequently used sites).

(6) Multiple canopy layers.

(7) Mean stand diameter greater than 21 in (52.5 cm).

(8) Increasing mean stand diameter and densities of trees greater than 26 in (66 cm) increases foraging habitat quality.

(9) Large accumulations of fallen trees and other woody debris on the ground.

(10) Sufficient open space below the canopy for northern spotted owls to fly.

(D) *Redwood Coast.*

(1) Nesting and roosting habitat; in addition, stands composed of hardwood tree species, particularly tanoak.

(2) Early-seral habitats 6 to 20 years old with dense shrub and hardwood cover and abundant woody debris; these habitats produce prey, and must occur in conjunction with nesting, roosting, or foraging habitat.

(3) Increasing density of small-to-medium sized trees (10 to 22 in; 25 to 56 cm), which increases foraging habitat quality.

(4) Trees greater than 26 in (66 cm) in diameter or greater than 41 years of age.

(5) Sufficient open space below the canopy for northern spotted owls to fly.

(iv) Primary constituent element 4: Habitat to support the transience and colonization phases of dispersal, which in all cases would optimally be composed of nesting, roosting, or foraging habitat (PCEs 2 or 3), but which may also be composed of other forest types that occur between larger blocks of nesting, roosting, and foraging habitat. In cases where nesting, roosting, or foraging habitats are insufficient to provide for dispersing or nonbreeding owls, the specific dispersal habitat PCEs for the northern spotted owl may be provided by the following:

(A) Habitat supporting the transience phase of dispersal, which includes:

(1) Stands with adequate tree size and canopy cover to provide protection from avian predators and minimal foraging opportunities; in general this may include, but is not limited to, trees with at least 11 in (28 cm) dbh and a minimum 40 percent canopy cover; and

(2) Younger and less diverse forest stands than foraging habitat, such as even-aged, pole-sized stands, if such stands contain some roosting structures and foraging habitat to allow for temporary resting and feeding during the transience phase.

(B) Habitat supporting the colonization phase of dispersal, which is generally equivalent to nesting, roosting and foraging habitat as described in PCEs 2 and 3, but may be smaller in area than that needed to support nesting pairs.

(3) Critical habitat does not include:

(i) manmade structures (such as buildings, aqueducts, runways, roads, other paved areas, or surface mine sites) and the land on which they are located; and

(ii) meadows, grasslands, oak woodlands, or aspen woodlands as described below existing on January 3, 2013 and not containing primary constituent elements 1 and 2, 3, or 4 as described in paragraph (2) of this entry.

(A) Meadows and grasslands include: dry, upland prairies and savannas in valleys and foothills of western Washington, Oregon, and northwest California; subalpine meadows; and grass and forb dominated cliffs, bluffs and grass balds found throughout these same areas. These areas are dominated by native grasses and diverse forbs, and may include a minor savanna component of Oregon white oak, Douglas-fir, or Ponderosa pine.

(B) Oak woodlands are characterized by an open canopy dominated by Oregon white oak. These areas may also include ponderosa pine, California black oak, Douglas-fir, or canyon live oak. The understory is relatively open with shrubs, grasses and wildflowers. Oak woodlands are typically found in drier landscapes and on south-facing slopes. This exception for oak woodlands does not include tanoak (*Notholithocarpus densiflorus*) stands, closed-canopy live oak (*Quercus agrifolia*) woodlands and open-canopied valley oak (*Quercus lobata*) and mixed-oak woodlands in subunits ICC–6 and RDC–5 in Napa, Sonoma, and Marin Counties, California.

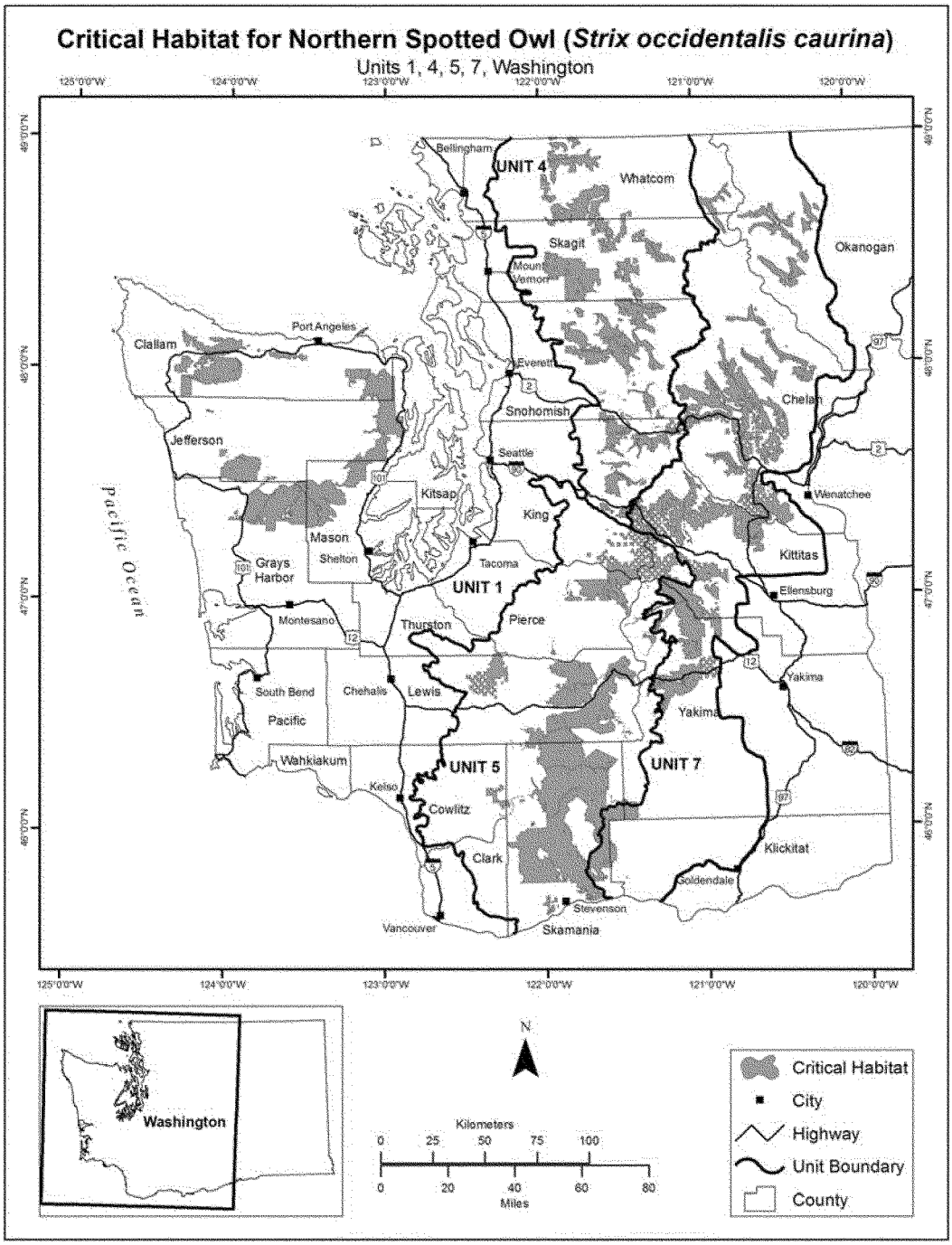
(C) Aspen (*Populus* spp.) woodlands are dominated by aspen trees with a forb, grass or shrub understory and are typically found on mountain slopes, rock outcrops and talus slopes, canyon walls, and some seeps and stream corridors. This forest type also can occur in riparian areas or in moist microsites within drier landscapes.

(4) We have determined that the physical and biological features in habitat occupied by the species at the time it was listed, as represented by the primary constituent elements, may require special management considerations or protection as required by 16 U.S.C. 1532(5)(A). However, nothing in this rule requires land managers to implement, or precludes land managers from implementing, special management or protection measures.

(5) *Critical habitat map units.* The designated critical habitat units for the northern spotted owl are depicted on the maps below. The coordinates or plot points or both on which each map is based are available at the field office Internet site (*http://www.fws.gov/oregonfwo*), *http://www.regulations.gov* at Docket No. FWS–R1–ES–2011–0112, and at the Service's Oregon Fish and Wildlife Office. You may obtain field office location information by contacting one of the Service regional offices, the addresses of which are listed at 50 CFR 2.2.

(6) **Note:** Index map of critical habitat units for the northern spotted owl in the State of Washington follows:

Index Map of Critical Habitat Units in the State of Washington



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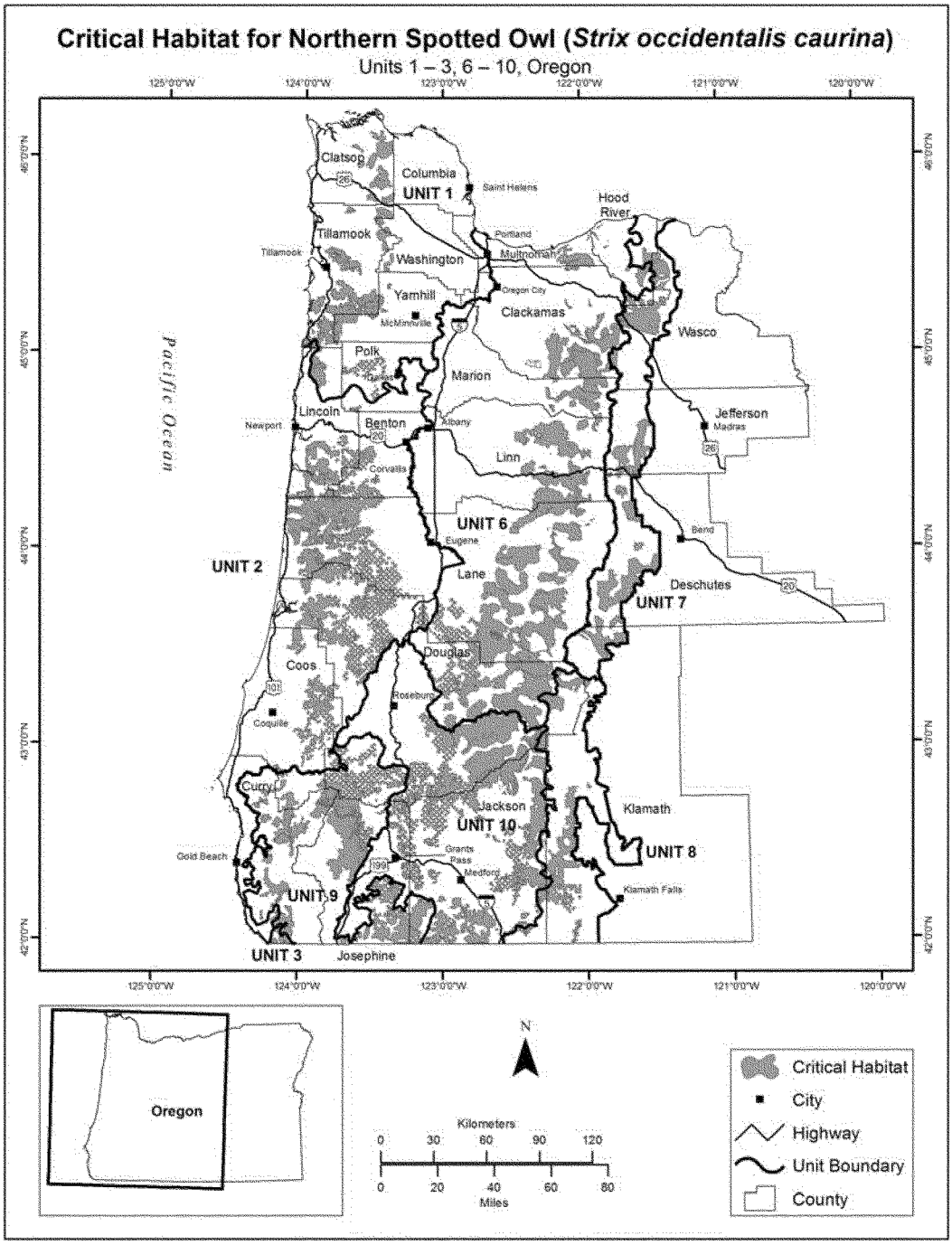
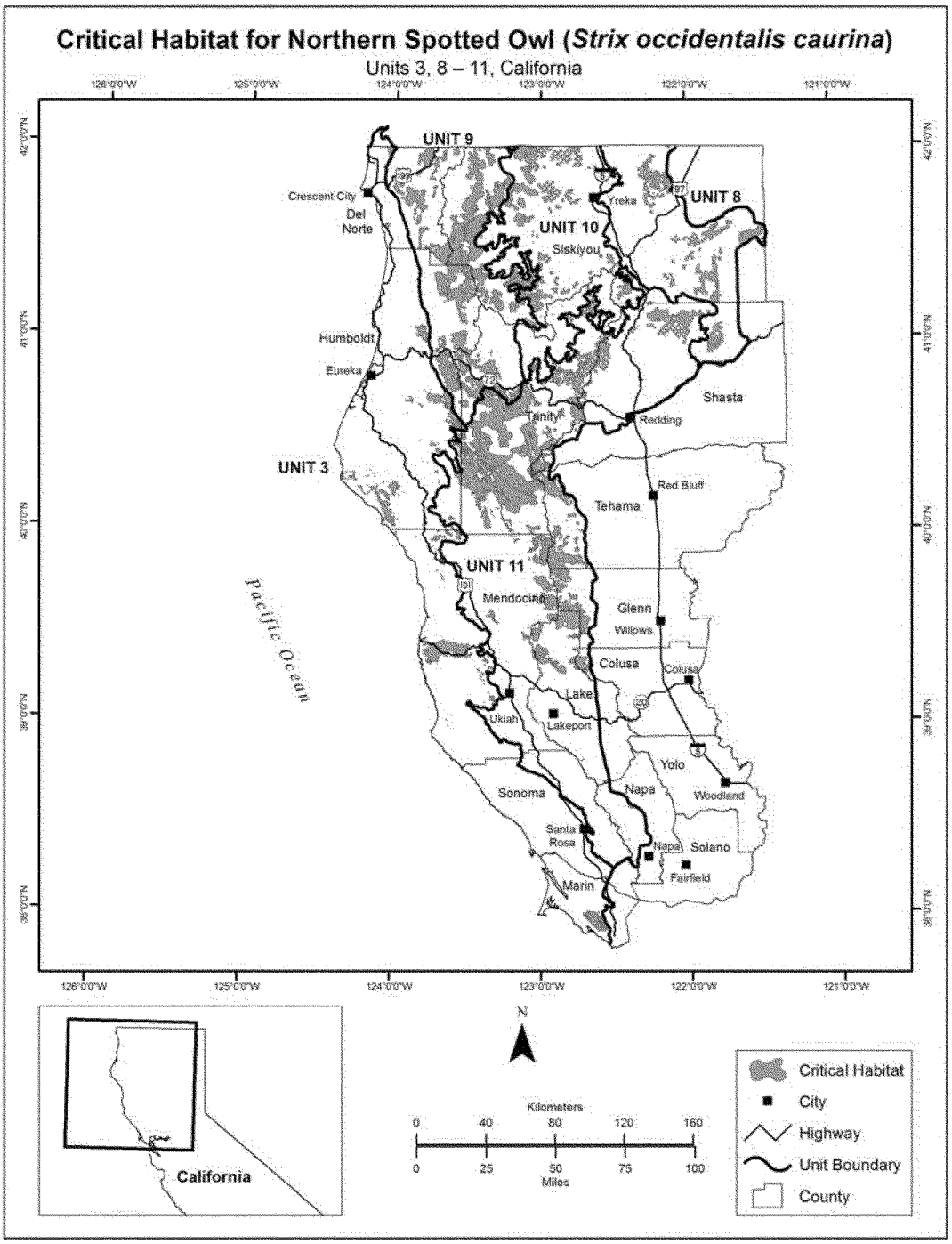
(7) **Note:** Index map of critical habitat units for the northern spotted owl in the State of Oregon follows:

Index Map of Critical Habitat Units in the State of Oregon

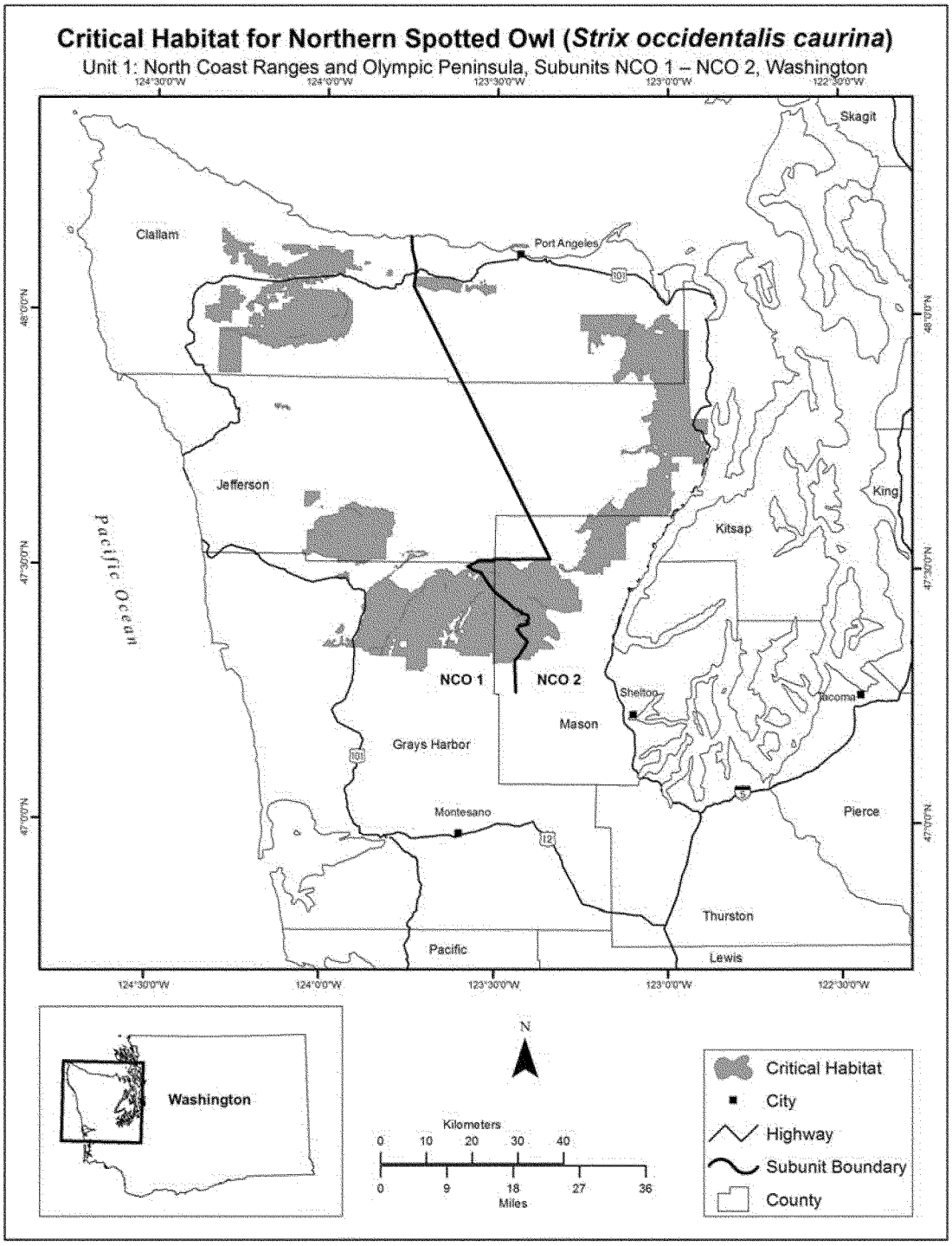


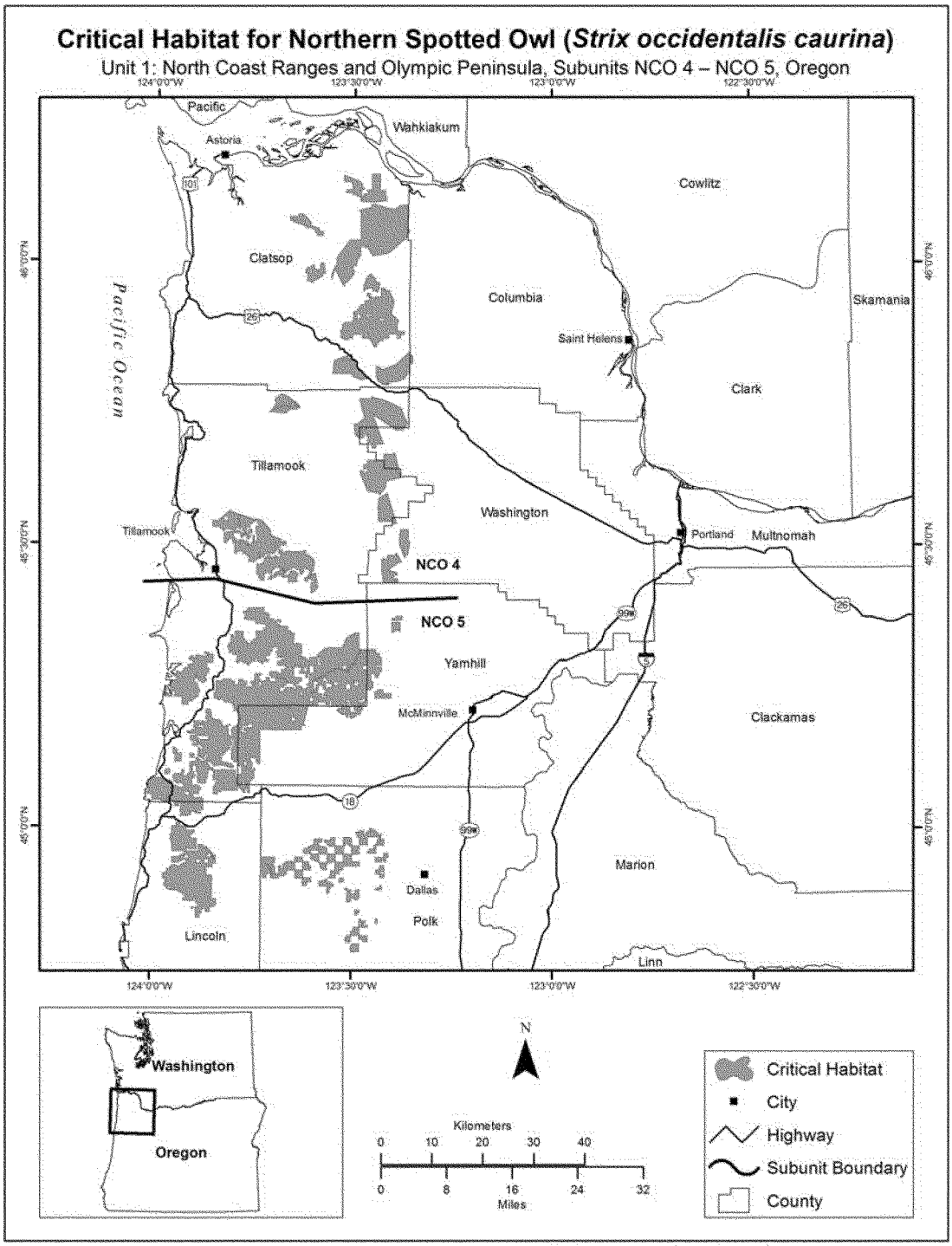
(8) **Note:** Index map of critical habitat units for the northern spotted owl in the State of California follows:

Index Map of Critical Habitat Units in the State of California

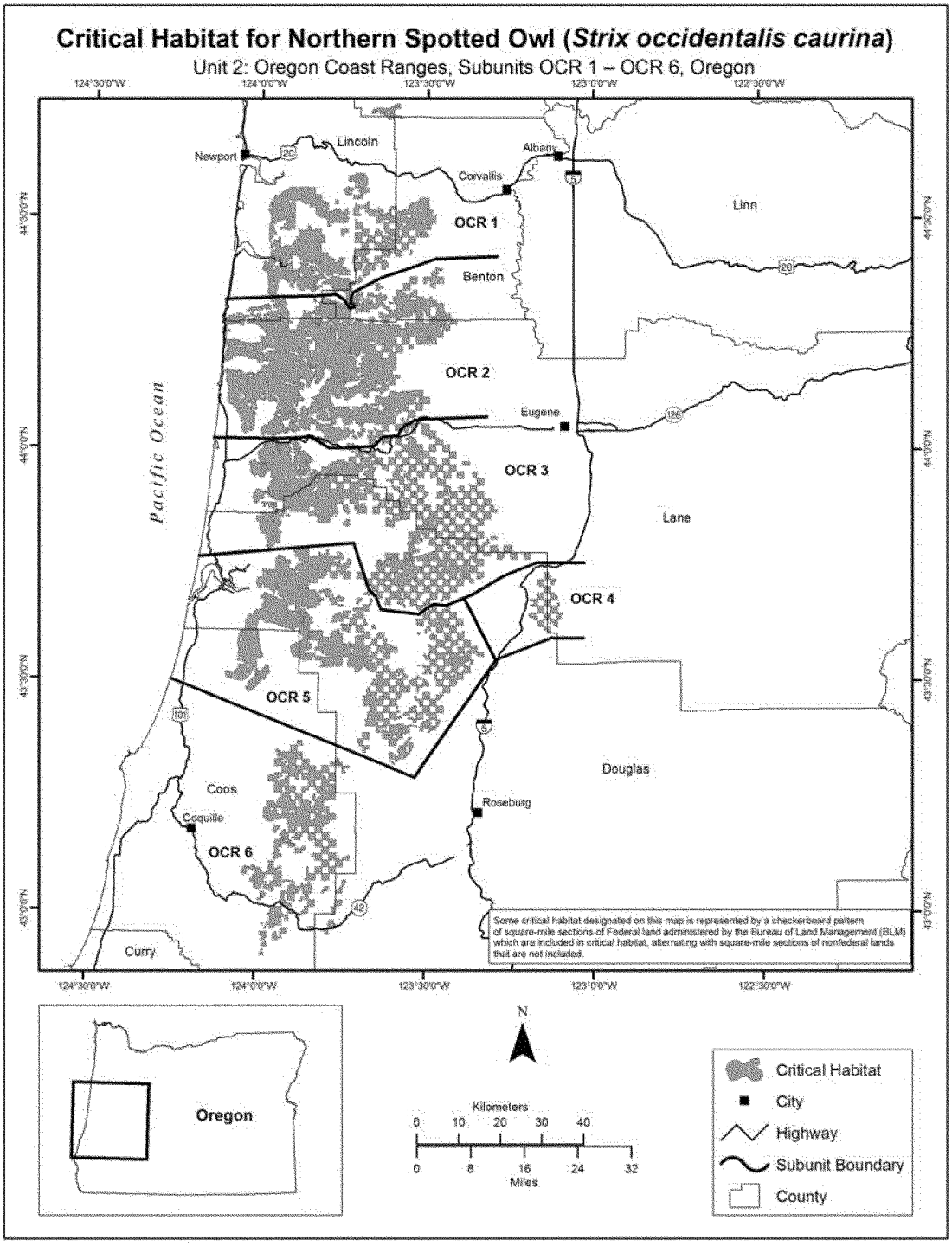


(9) Unit 1: North Coast Ranges and Olympic Peninsula, Oregon and Washington. Maps of Unit 1: North Coast Ranges and Olympic Peninsula, Oregon and Washington, follow:

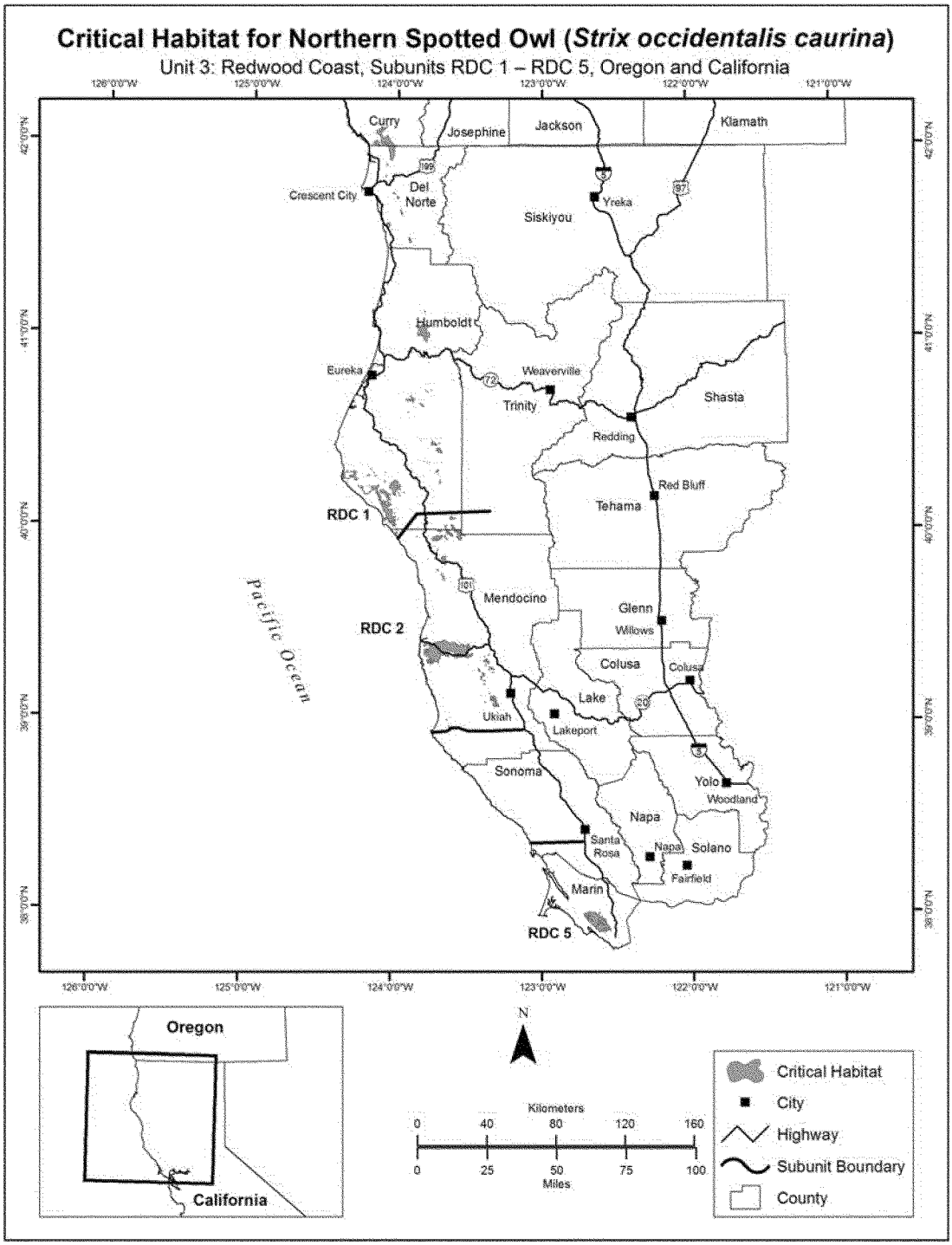

Critical Habitat for Northern Spotted Owl (*Strix occidentalis caurina*)
Unit 1: North Coast Ranges and Olympic Peninsula, Subunits NCO 1 – NCO 2, Washington
124°30'0"W
124°0'0"W
123°30'0"W
123°0'0"W
122°30'0"W
48°0'0"N
47°30'0"N
47°0'0"N
Skagit
Clallam
Port Angeles
101
Jefferson
King
Kitsap
Pacific Ocean
NCO 1
NCO 2
Shelton
Tacoma
Mason
Grays Harbor
Montesano
12
5
Pierce
Thurston
Pacific
Lewis
Washington
N
Kilometers
0 10 20 30 40
0 9 18 27 36
Miles
Critical Habitat
City
Highway
Subunit Boundary
County


Critical Habitat for Northern Spotted Owl (Strix occidentalis caurina)
Unit 1: North Coast Ranges and Olympic Peninsula, Subunits NCO 4 – NCO 5, Oregon
124°0'0"W
123°30'0"W
123°0'0"W
122°30'0"W
46°0'0"N
45°30'0"N
45°0'0"N
Pacific
Wahkiakum
Astoria
Cowlitz
Clatsop
Columbia
Skamania
Saint Helens
Clark
Pacific Ocean
Tillamook
Washington
Portland
Multnomah
NCO 4
NCO 5
Yamhill
McMinnville
Clackamas
Marion
Dallas
Polk
Lincoln
Linn
Washington
Oregon
N
Kilometers
0 10 20 30 40
0 8 16 24 32
Miles
Critical Habitat
City
Highway
Subunit Boundary
County

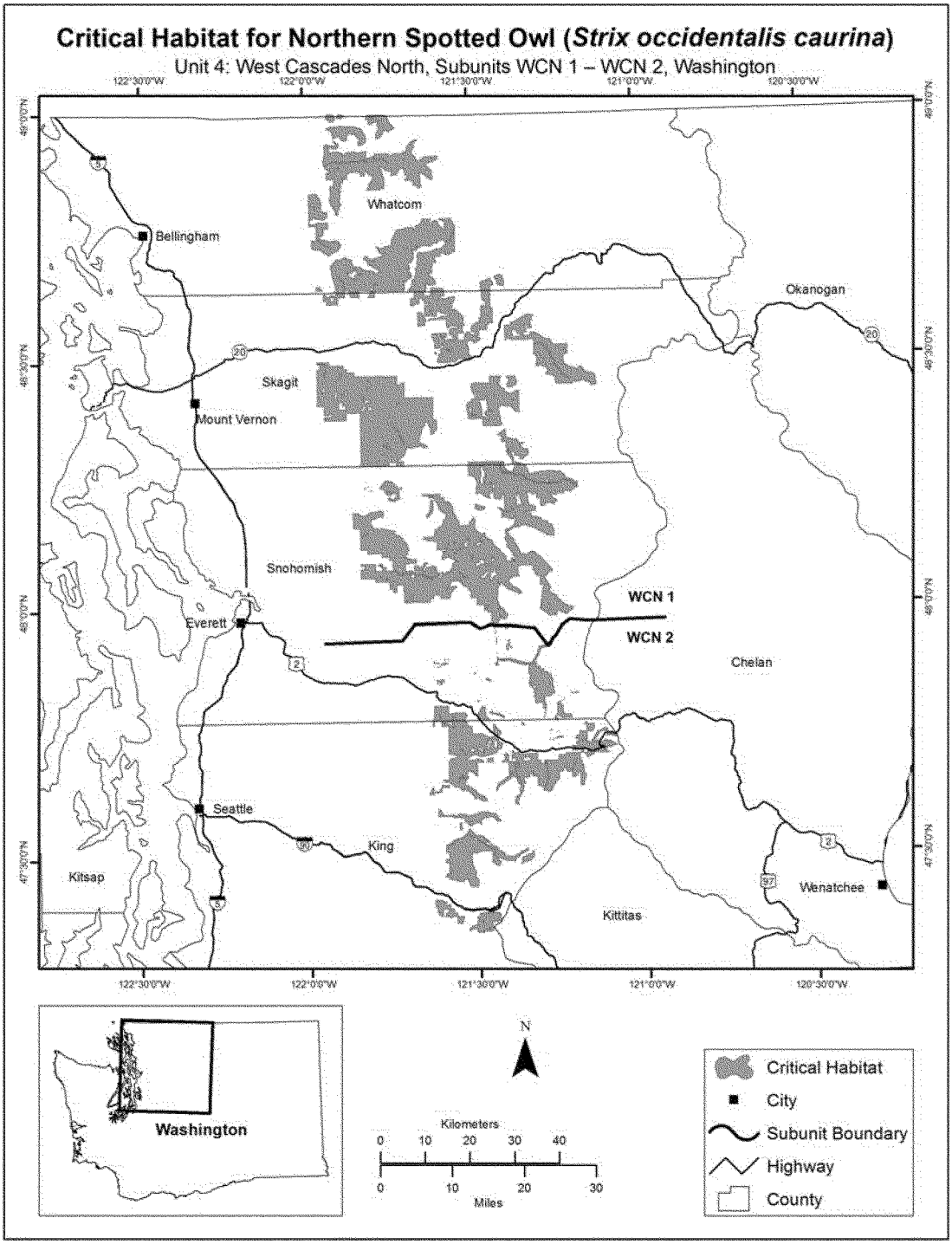
(10) Unit 2: Oregon Coast Ranges, Oregon. Map of Unit 2, OregonCoast Ranges, Oregon, follows:



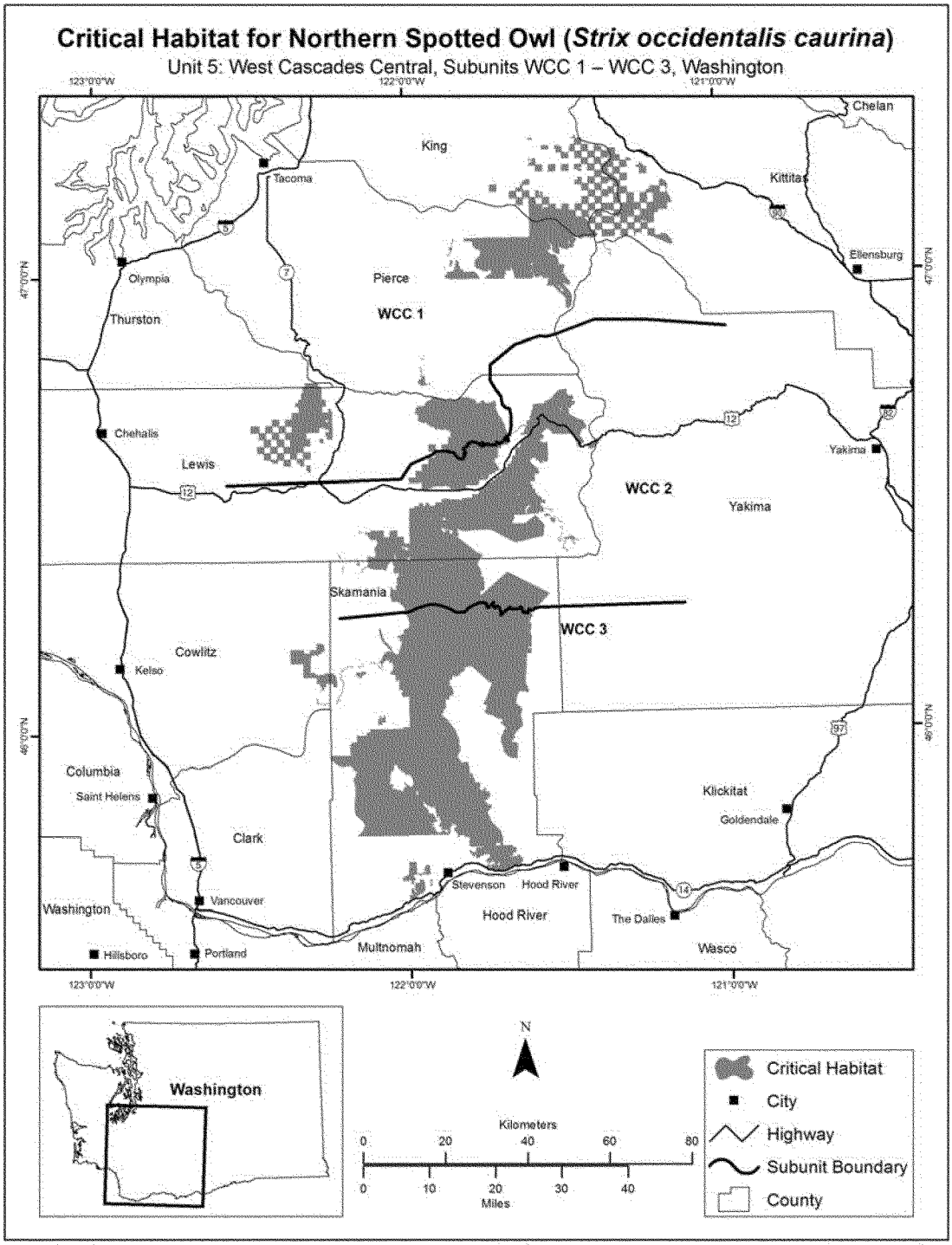
(11) Unit 3: Redwood Coast, Oregon and California. Map of Unit 3, Redwood Coast, Oregon and California, follows:



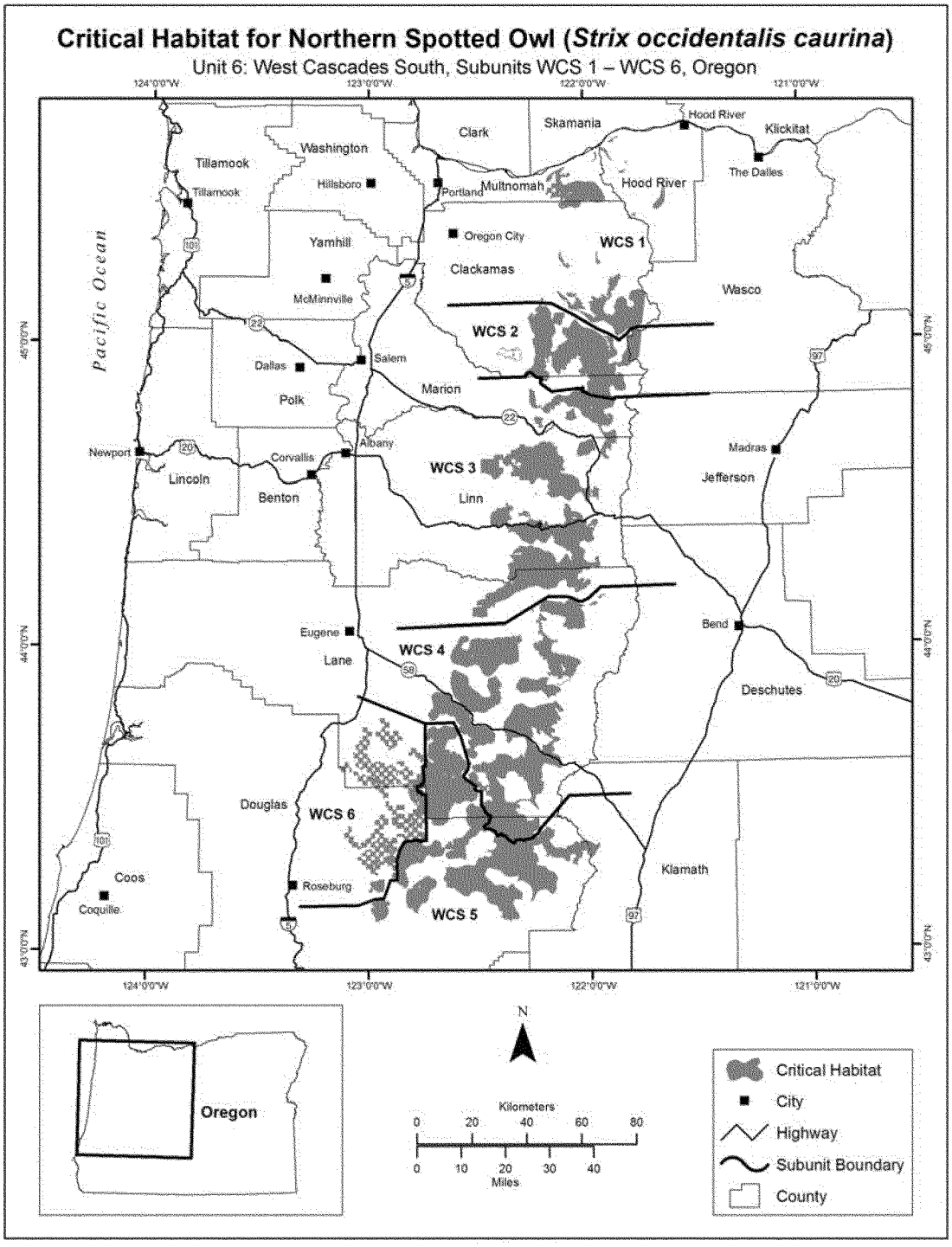
(12) Unit 4: West Cascades North, Washington. Map of Unit 4, West Cascades North, Washington, follows:



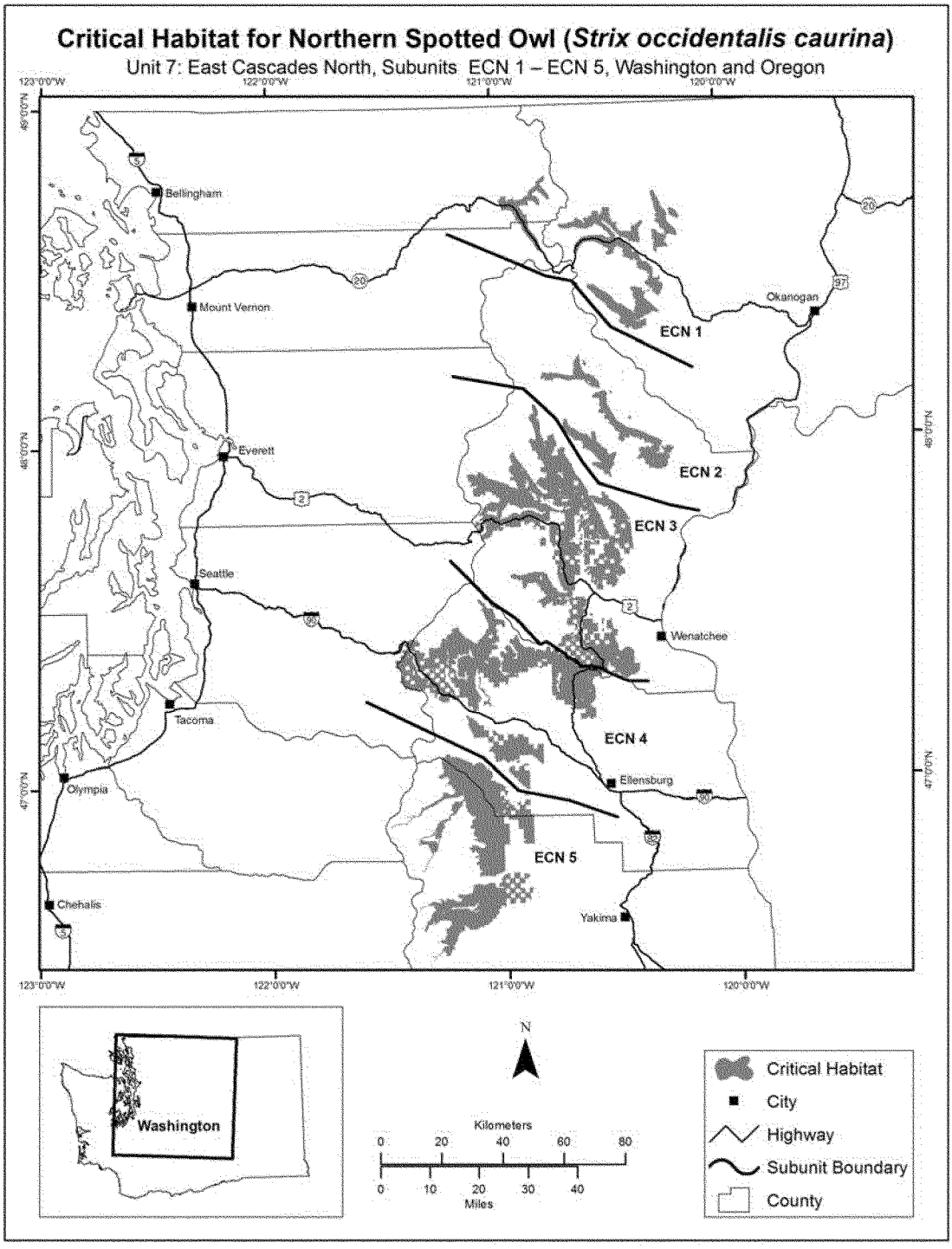
(13) Unit 5: West Cascades Central, Washington. Map of Unit 5, West Cascades Central, Washington, follows:

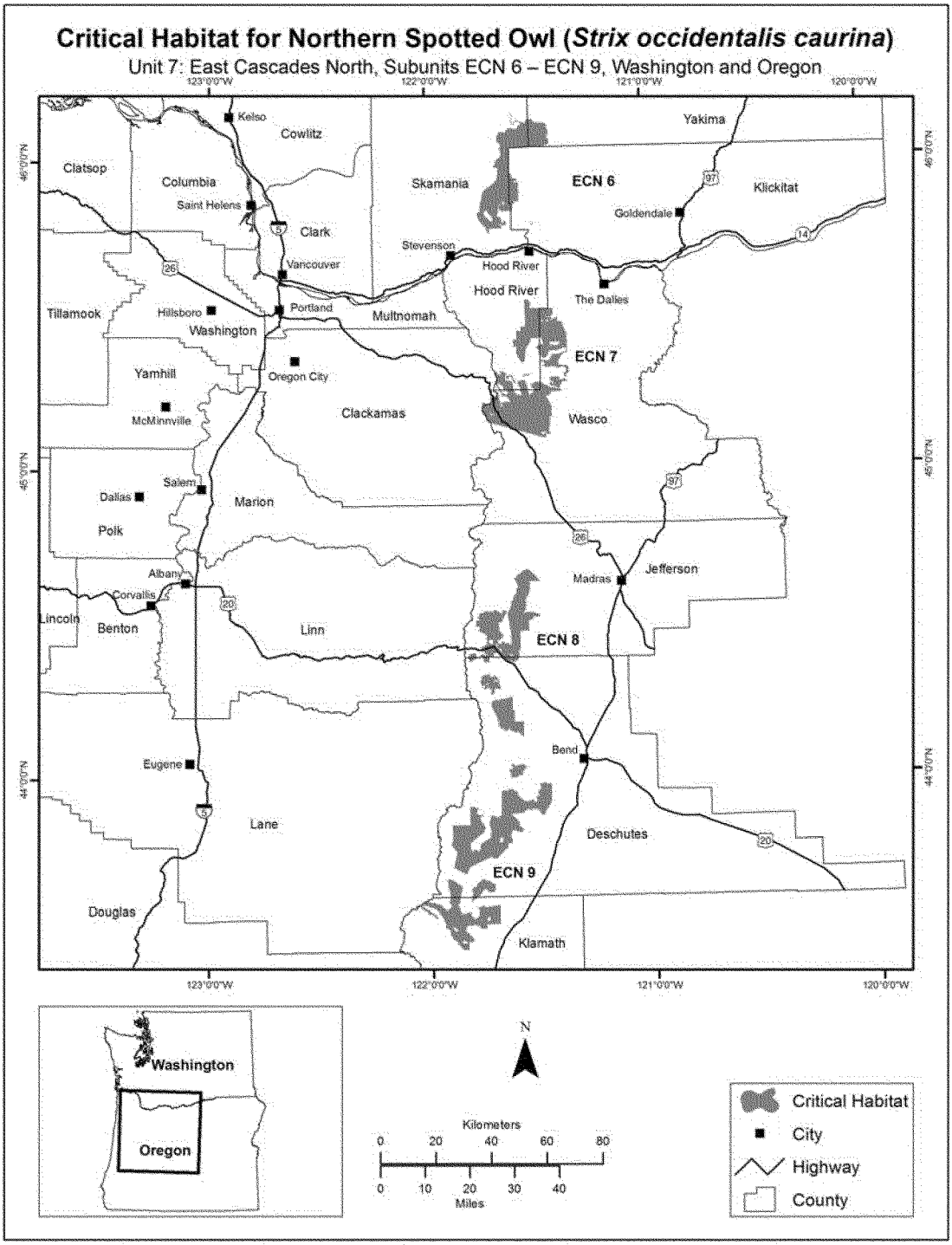


(14) Unit 6: West Cascades South, Washington. Map of Unit 6, West Cascades South, Washington, follows:

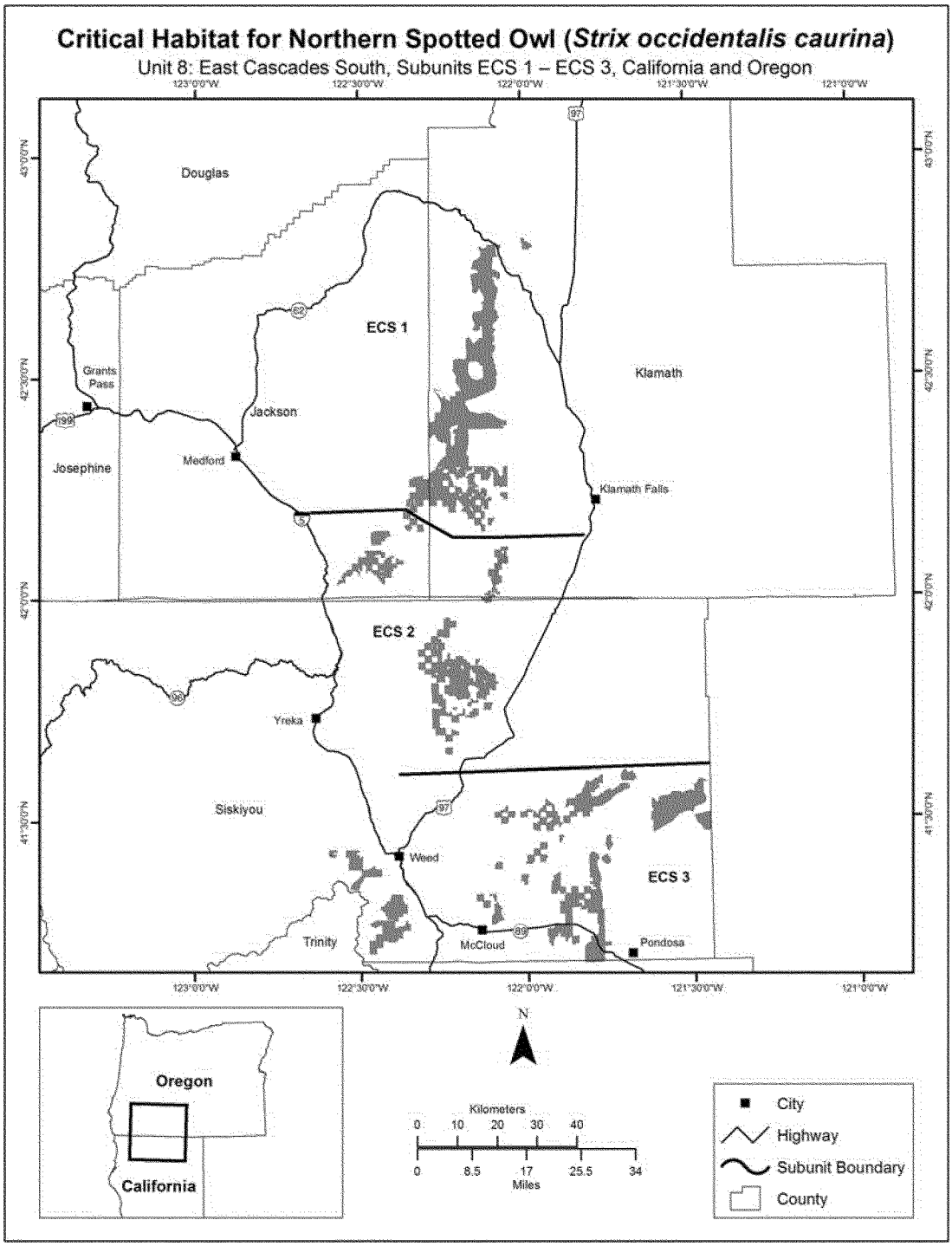


(15) Unit 7: East Cascades North, Washington and Oregon. Maps of Unit 7, East Cascades North, Washington and Oregon, follow:

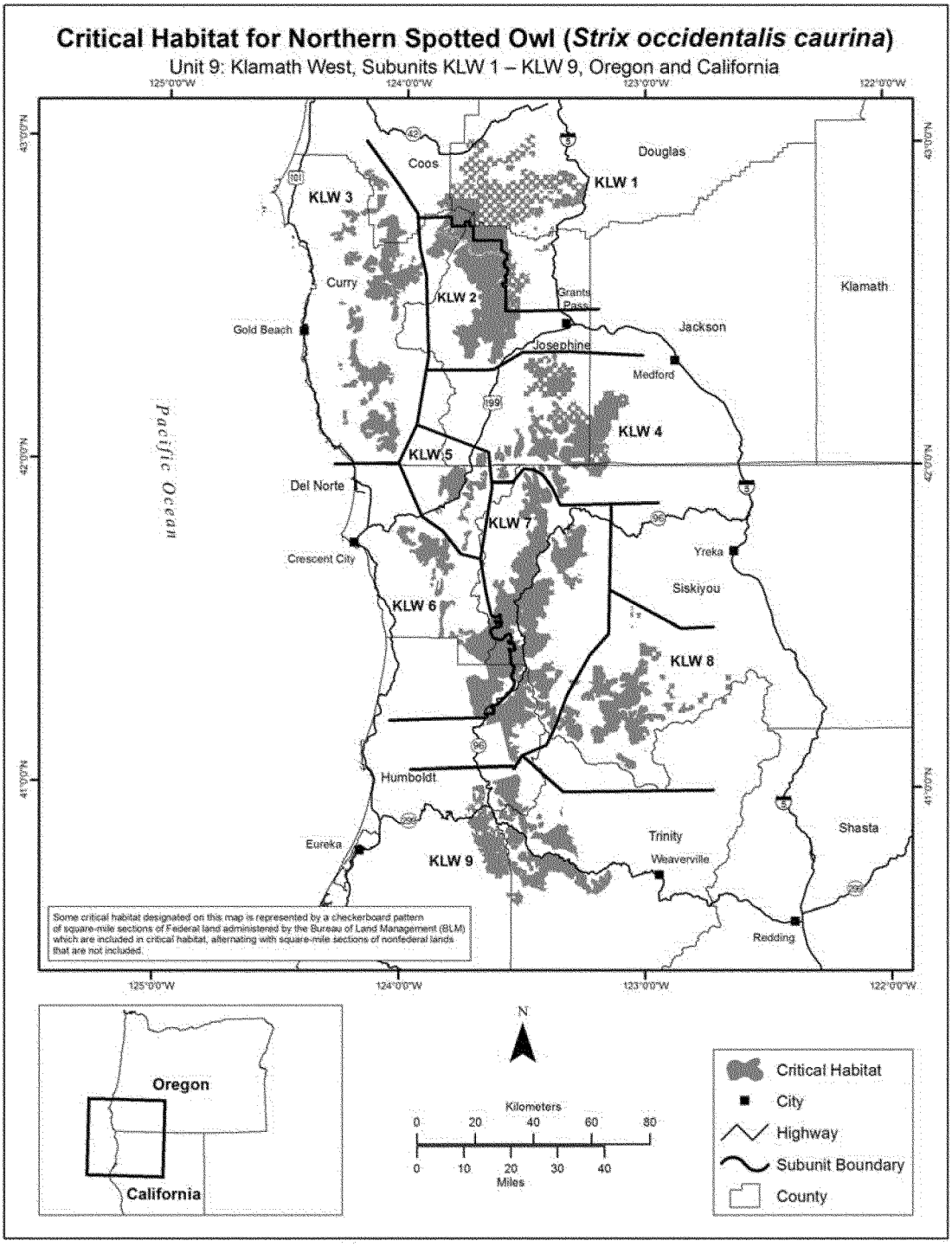



Critical Habitat for Northern Spotted Owl (*Strix occidentalis caurina*)
Unit 7: East Cascades North, Subunits ECN 6 – ECN 9, Washington and Oregon
123°0'0"W
122°0'0"W
121°0'0"W
120°0'0"W
46°0'0"N
45°0'0"N
44°0'0"N
Kelso
Cowlitz
Yakima
Clatsop
Columbia
Skamania
ECN 6
Klickitat
Saint Helens
Goldendale
Clark
Stevenson
Hood River
Vancouver
Hood River
The Dalles
Tillamook
Hillsboro
Portland
Multnomah
Washington
ECN 7
Yamhill
Oregon City
Clackamas
Wasco
McMinnville
Salem
Dallas
Marion
Polk
Madras
Jefferson
Albany
Corvallis
Lincoln
Benton
Linn
ECN 8
Bend
Eugene
Lane
Deschutes
ECN 9
Douglas
Klamath
Washington
Oregon
N
Kilometers
0 20 40 60 80
0 10 20 30 40
Miles
Critical Habitat
City
Highway
County

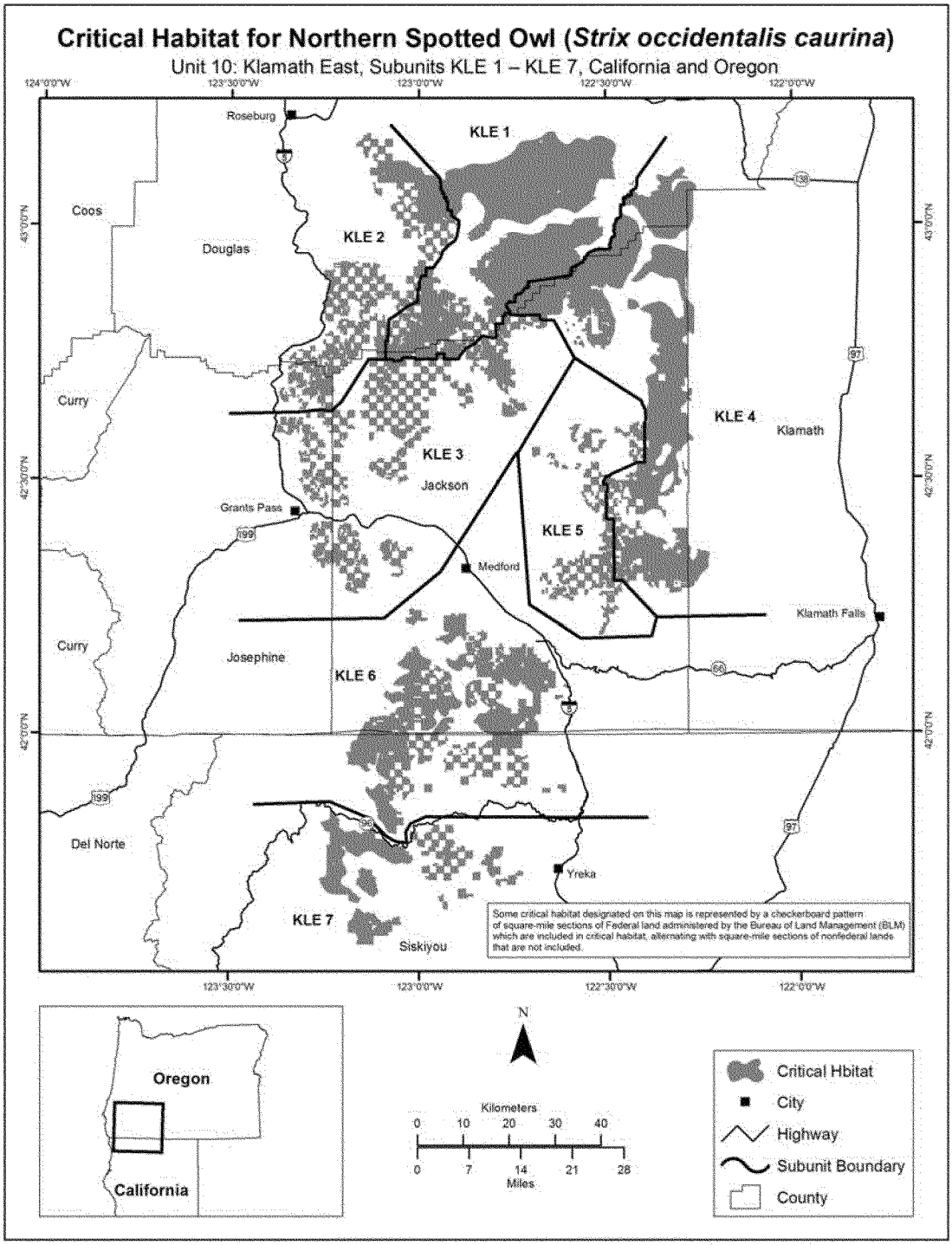
(16) Unit 8: East Cascades South, California and Oregon. Map of Unit 8, East Cascades South, California and Oregon, follows:



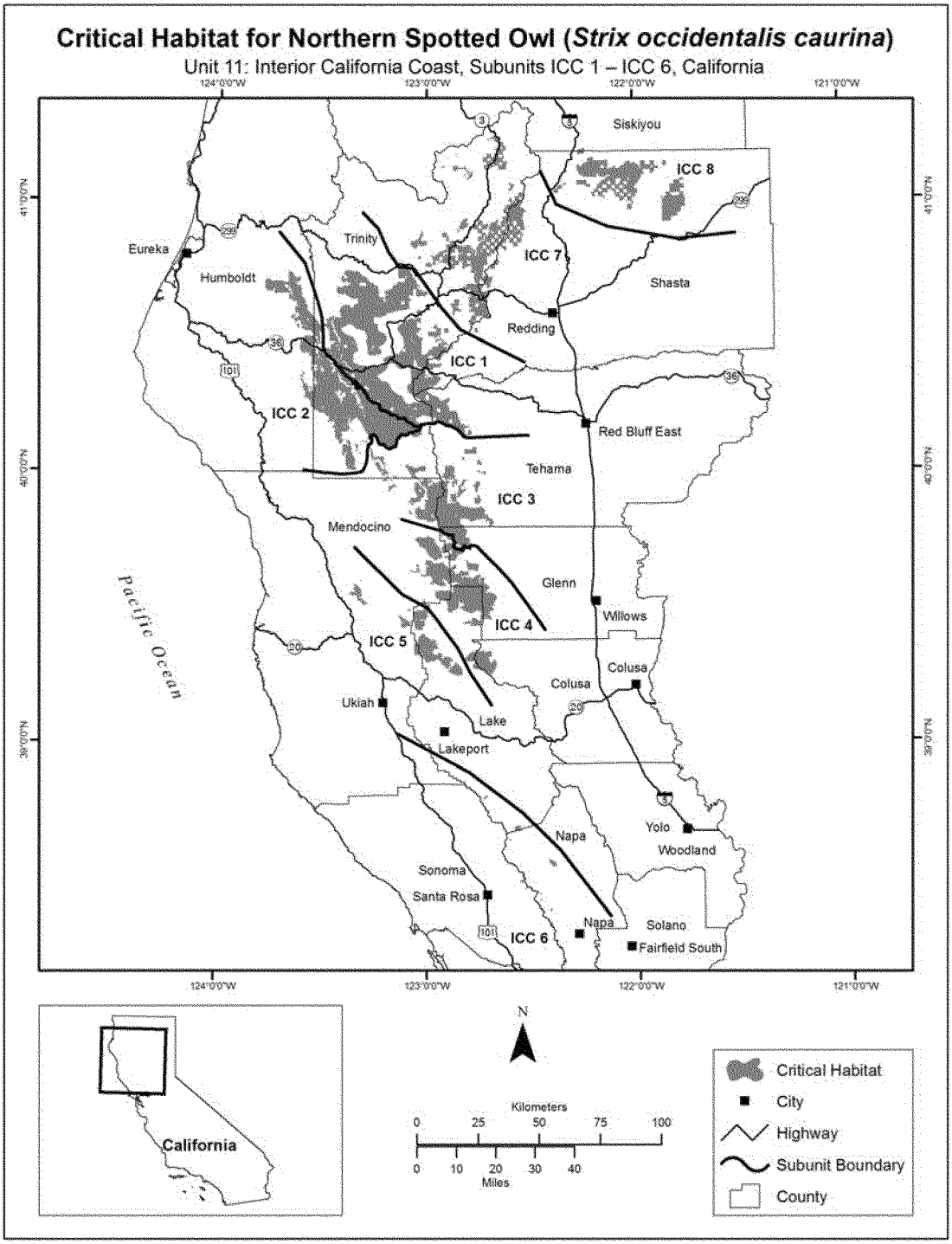
(17) Unit 9: Klamath West, Oregon and California. Map of Unit 9: Klamath West, Oregon and California, follows:



(18) Unit 10: Klamath East, California.
Map of Unit 10: Klamath East, California, follows:



(19) Unit 11: Interior California Coast, California. Map of Unit 11: Interior California Coast, California, follows:



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Dated: November 20, 2012.

Rachel Jacobson,

Principal Deputy Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 2012–28714 Filed 12–3–12; 8:45 am]

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