

## DEPARTMENT OF THE INTERIOR

## Fish and Wildlife Service

## 50 CFR Part 17

[Docket No. FWS-R2-ES-2012-0042;  
4500030114]

RIN 1018-AX13

### Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Jaguar

**AGENCY:** Fish and Wildlife Service, Interior.

**ACTION:** Final rule.

**SUMMARY:** We, the U.S. Fish and Wildlife Service (Service), designate critical habitat for the jaguar (*Panthera onca*) under the Endangered Species Act, as amended. In total, approximately 309,263 hectares (764,207 acres) in Pima, Santa Cruz, and Cochise Counties, Arizona, and Hidalgo County, New Mexico, fall within the boundaries of the critical habitat designation. This designation fulfills our obligations under a settlement agreement. The effect of this regulation is to designate critical habitat for jaguar under the Endangered Species Act.

**DATES:** This rule is effective on April 4, 2014.

**ADDRESSES:** This final rule is available on the Internet at <http://www.fws.gov/southwest/es/arizona/Jaguar.htm>, and at <http://www.regulations.gov>. Comments and materials received, as well as some supporting documentation we used in preparing this final rule, including the final economic analysis and final environmental assessment, are available for public inspection at <http://www.regulations.gov>. Some supporting documentation is also available at <http://www.fws.gov/southwest/es/arizona/Jaguar.htm>. All of the comments, materials, and documentation that we considered in this rulemaking are available by appointment, during normal business hours at: U.S. Fish and Wildlife Service, Arizona Ecological Services Fish and Wildlife Office, 2321 West Royal Palm Drive, Suite 103, Phoenix, AZ 85021; telephone 602-242-0210. If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800-877-8339.

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.regulations.gov> at Docket No. FWS-R2-ES-2012-0042, and at the Arizona Ecological Services Fish and

Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**). Any additional tools or supporting information that we developed for this critical habitat designation will also be available at the Fish and Wildlife Service Web site and Field Office set out above, and may also be included at <http://www.regulations.gov>.

**FOR FURTHER INFORMATION CONTACT:** Steve Spangle, Field Supervisor, U.S. Fish and Wildlife Service, Arizona Ecological Services Fish and Wildlife Office, 2321 West Royal Palm Drive, Suite 103, Phoenix, AZ 85021; telephone 602-242-0210. If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800-877-8339.

#### SUPPLEMENTARY INFORMATION:

##### Executive Summary

*Why we need to publish a rule.* This is a final rule to designate critical habitat for the jaguar. Under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (Act), any species that is determined to be an endangered or threatened species requires critical habitat to be designated, to the maximum extent prudent and determinable. Designations and revisions of critical habitat can only be completed by issuing a rule.

We, the U.S. Fish and Wildlife Service (Service), listed the jaguar as an endangered species on March 30, 1972 (37 FR 6476), in accordance with the Endangered Species Conservation Act of 1969, a precursor to the Endangered Species Act of 1973, as amended (Act; 16 U.S.C. 1531 et seq.). On August 20, 2012, we published in the **Federal Register** a proposed critical habitat designation for jaguar (77 FR 50213). 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 jaguar. Here we are designating approximately 309,263 hectares (ha) (764,207 acres (ac)) in Pima, Santa Cruz, and Cochise Counties, Arizona, and Hidalgo County, New Mexico, in six critical habitat units.

- Unit 1, Baboquivari Unit, approximately 25,549 ha (63,134 ac) Baboquivari, Saucito, Quinlan, and Coyote Mountains in Pima County, Arizona.

- Unit 2, Atascosa Unit, approximately 58,624 ha (144,865 ac) in the Tumacacori, Atascosa, and Pajarito Mountains, in Pima and Santa Cruz Counties, Arizona.

- Unit 3, Patagonia Unit, approximately 142,248 ha (351,501 ac) in the Santa Rita, Patagonia, Empire, and Huachuca Mountains, and Grosvenor and Canelo Hills, in Pima, Santa Cruz, and Cochise Counties, Arizona.

- Unit 4, Whetstone Unit, approximately 38,149 ha (94,269 ac) in the Whetstone Mountains, including connections to the Empire, Santa Rita and Huachuca Mountains, in Pima, Santa Cruz, and Cochise Counties, Arizona.

- Unit 5, Peloncillo Unit, approximately 41,571 ha (102,724 ac) in the Peloncillo Mountains, in Cochise County, Arizona, and Hidalgo County, New Mexico.

- Unit 6, San Luis Unit, approximately 3,122 ha (7,714 ac) in the San Luis Mountains, Hidalgo County, New Mexico.

*This rule consists of:* A final rule for designation of critical habitat for the jaguar. The jaguar is already listed under the Act. This rule designates critical habitat essential for the conservation of the species.

*We have prepared an economic analysis and environmental assessment of the designation of critical habitat.* In order to consider economic impacts, we have prepared an analysis of the economic impacts of the critical habitat designation and related factors. We have also completed an environmental assessment to evaluate whether there would be any significant environmental impacts as a result of the critical habitat designation. We announced the availability of both the draft economic analysis and draft environmental assessment in the **Federal Register** on July 1, 2013 (78 FR 39237), allowing the public to provide comments on our analyses. We have incorporated the comments and have completed the final economic analysis and final environmental assessment with this final determination.

*Peer review and public comment.* We sought comments from seven independent specialists to ensure that our designation is based on scientifically sound data and analyses. We obtained opinions from six knowledgeable individuals with scientific expertise to review our technical assumptions, analysis, and whether or not we had used the best available information. Most of the peer reviewers (five of the six) generally concurred with our methods and

conclusions and provided additional information, clarifications, and suggestions to improve this final rule. One peer reviewer was against critical habitat designation for the jaguar, stating that there is no habitat in the United States at this time that is critical to the survival of the jaguar as a species. Information we received from peer review is incorporated in this final revised designation. We also considered all comments and information received from the public during the comment period.

#### Previous Federal Actions

On August 20, 2012, we published in the **Federal Register** a proposed rule to designate critical habitat for the jaguar (77 FR 50214). In that proposed rule, we proposed to designate approximately 339,220 ha (838,232 ac) as critical habitat in six units located in Pima, Santa Cruz, and Cochise Counties, Arizona, and Hidalgo County, New Mexico. The comment period opened August 20, 2012, and closed October 19, 2012.

On March 12, 2013, we received a report from the Jaguar Recovery Team (described later in this document) entitled *Jaguar Habitat Modeling and Database Update* (Sanderson and Fisher 2013, entire) that included a revised habitat model for the jaguar in the proposed Northwestern Recovery Unit. This report recommended defining habitat patches of less than 100 square kilometers (km<sup>2</sup>) (38.6 square miles (mi<sup>2</sup>)) in size as unsuitable for jaguars; therefore, we incorporated this information into the physical and biological feature for the jaguar, which formerly described areas of less than 84 km<sup>2</sup> (32.4 mi<sup>2</sup>) as unsuitable. Additionally, the report recommended slight changes to some of the habitat features we used to describe the primary constituent elements (PCEs) comprising jaguar critical habitat (see Summary of Changes from Proposed Rule, above). The revised physical and biological feature and PCEs resulted in changes to the boundaries of our original proposed critical habitat.

On July 1, 2013 (78 FR 39237), we announced the revisions described above to our proposed designation of critical habitat for the jaguar, which now included approximately 347,277 ha (858,137 ac) as critical habitat in six units located in Pima, Santa Cruz, and Cochise Counties, Arizona, and Hidalgo County, New Mexico. We also announced the availability of a draft economic analysis and draft environmental assessment of the revised proposed designation of critical habitat for jaguar and an amended required

determinations section of the proposal. Additionally, we announced the reopening of the comment period. The comment period opened July 1, 2013, and closed August 9, 2013.

On August 15, 2013, the U.S. District Court for the District of Columbia granted the Service's motion to extend the deadline for publishing a final critical habitat designation for the jaguar to December 16, 2013. This rescheduled final rulemaking date allowed us to reopen the public comment period again, for which we had received multiple requests. On August 29, 2013 (78 FR 53390), we announced the reopening of the comment period for an additional 15 days. The comment period opened August 29, 2013, and closed September 13, 2013.

All previous Federal actions are described in the proposal and revised proposal to designate critical habitat for the jaguar under the Act published in the **Federal Register** (77 FR 50214; August 20, 2012 and 78 FR 39237; July 1, 2013, respectively) and the final rule clarifying the status of the jaguar in the United States (62 FR 39147; July 22, 1997).

#### Background

Below we provide a general discussion of jaguar habitat requirements. Additional background information on the jaguar, beyond what is provided below, can be found in the proposed jaguar critical habitat designation published in the **Federal Register** on August 20, 2012 (77 FR 50214), the revisions to our proposed designation of critical habitat for the jaguar published in the **Federal Register** on July 1, 2013 (78 FR 39237), and this final rule clarifying the status of the jaguar in the United States (62 FR 39147; July 22, 1997).

#### *Jaguar Habitat Requirements in the United States and U.S.-Mexico Borderlands Area*

Most of the information regarding jaguar habitat requirements comes from Central and South America; little, if any, is available for the northwestern-most portion of its range, including the United States. Jaguar habitat available in the U.S.-Mexico borderlands area is quite different from habitat in Central and South America, where jaguars show a high affinity for lowland wet communities, including swampy savannas or tropical rain forests toward and at middle latitudes. Swank and Teer (1989, p. 14) state that jaguars prefer a warm, tropical climate, usually associated with water, and are rarely found in extensive arid areas. Rabinowitz (1999, p. 97) affirms that the

most robust jaguar populations have been associated with tropical climates in areas of low elevation with dense cover and year-round water sources. Brown and López González (2001, p. 43) further state that, in South and Central America, jaguars usually avoid open country like grasslands or desertscrub, instead preferring the closed vegetative structure of nearly every tropical forest type.

However, jaguars have been documented in arid areas of northwestern Mexico and the southwestern United States, including thornscrub, desertscrub, lowland desert, mesquite grassland, Madrean oak woodland, and pine-oak woodland communities (Brown and López González 2001, pp. 43–50; Boydston and López González 2005, p. 54; McCain and Childs 2008, p. 7; Rosas-Rosas and Bender 2012, p. 88). The more open, dry habitat of the southwestern United States has been characterized as marginal habitat for jaguars in terms of water, cover, and prey densities (Rabinowitz 1999, p. 97). However, McCain and Childs (2008, p. 7) documented two male jaguars (and possibly a third) using an extensive area including habitats of the Sonoran lowland desert, Sonoran desertscrub, mesquite grassland, Madrean oak woodland, and pine-oak woodland in mountain ranges in southern Arizona. Additionally, another male jaguar has been documented utilizing Madrean evergreen woodland habitat in southern Arizona from 2011 through 2013 (see Table 1 in the “Class I Records” section, below). Therefore, while habitat in the United States can be considered marginal when compared to other areas throughout the species' range, it appears that a few, possibly resident jaguars are able to use the more open, arid habitat found in the southwestern United States.

#### *Jaguar Recovery Planning in Relation to Critical Habitat*

Information currently available for northern jaguars is scant; therefore, we convened a binational Jaguar Recovery Team team in 2010 to synthesize information on the jaguar, focusing on a unit comprising jaguars in the northernmost portion of their range, the proposed Northwestern Recovery Unit. The team comprises members from the United States and Mexico, and is composed of two subgroups: A technical subgroup and an implementation subgroup. Both subgroups have nearly equal representation from the United States and Mexico. The technical subgroup consists of feline ecologists, conservation biologists, and other

experts, who advise the Jaguar Recovery Team and the Service on appropriate short- and long-term actions necessary to recover the jaguar. The implementation subgroup consists of members who advise the technical subgroup and the Service on ways to achieve timely recovery with minimal social and economic impacts or costs. Specifically, the implementation subgroup consists of landowners and land and wildlife managers from Federal, state, tribal, and private entities. The Jaguar Recovery Team has two co-leaders, one from the United States and one from Mexico; both are members of the technical subgroup, though they serve as co-leaders for the entire Jaguar Recovery Team.

In April 2012, the Jaguar Recovery Team produced the Recovery Outline for the Jaguar. The Recovery Outline serves as an interim guidance document to direct recovery efforts, including recovery planning, for the jaguar until a full recovery plan is developed and approved (a draft recovery plan for the jaguar is expected to be completed in spring 2014). It includes a preliminary strategy for recovery of the species, and recommends high-priority actions to stabilize and recover the species. The Recovery Outline delineates two recovery units for the species, the Northwestern Recovery Unit (encompassing the United States and northwestern Mexico) and the Pan American Recovery Unit (encompassing the rest of the range). The recovery units are further divided into core or secondary areas. Lands within the United States are a part of the Borderlands Secondary Area within the proposed Northwestern Recovery Unit (Sanderson and Fisher 2013, p. 10; note that this map updates the map of the Northwestern Recovery Unit shown on p. 58 of the Recovery Outline for the Jaguar).

The Borderlands Secondary Area within the proposed Northwestern Recovery Unit for the jaguar (Jaguar Recovery Team 2012, p. 58; Sanderson and Fisher 2013, p. 10) is only a small portion of the jaguar's range. Because such a small portion occurs in the United States, researchers anticipate that recovery of the entire species will rely primarily on actions that occur outside of the United States; activities that may adversely or beneficially affect jaguars in the United States are less likely to affect recovery than activities in core areas of their range (Jaguar Recovery Team 2012, p. 38). However, the portion of the United States is located within a secondary area that provides a recovery function benefitting the overall recovery unit (Jaguar

Recovery Team 2012, pp. 40, 42). For example, specific areas within this secondary area that provide the physical and biological features essential to jaguar habitat can contribute to the species' persistence and, therefore, overall conservation. These areas support some individuals during dispersal movements, provide small patches of habitat (perhaps in some cases with a few resident jaguars), and provide areas for cyclic expansion and contraction of the nearest core area and breeding population in the Northwestern Recovery Unit (about 210 km (130 mi) south of the U.S.-Mexico border in Sonora near the towns of Huasabas, Sahuaripa (Brown and López González 2001, pp. 108–109), and Nacori Chico (Rosas-Rosas and Bender 2012, pp. 88–89)).

Independent peer review cited in our July 22, 1997, clarifying rule (62 FR 39147, pp. 39153–39154) states that individuals dispersing into the United States are important because they occupy habitat that serves as a buffer to zones of regular reproduction and are potential colonizers of vacant range, and that, as such, areas supporting them are important to maintaining normal demographics, as well as allowing for possible range expansion. As described in the Recovery Outline for the Jaguar (Jaguar Recovery Team 2012, pp. 40, 42), the Northwestern Recovery Unit is essential for the conservation of the species; therefore, consideration of the spatial and biological dynamics that allow this unit to function and that benefit the overall unit is prudent. Providing connectivity from the United States to Mexico is a key element to maintaining those processes.

Additionally, as thoroughly discussed in the Recovery Outline for the Jaguar (Jaguar Recovery Team 2012, pp. 19–20) and Johnson *et al.* (2011, pp. 30–31), populations at the edge of a species' range play a role in maintaining the total genetic diversity of a species; in some cases, these peripheral populations persist the longest as fragmentation and habitat loss impact the total range (Channell and Lomolino 2000, pp. 84–85). The United States and northwestern Mexico represent the northernmost extent of the jaguar's current range, with populations persisting in one of only four distinct xeric (extremely dry) habitats that occur within the species' range (Sanderson *et al.* 2002, Appendix 1). Peripheral populations such as these are an important genetic resource in that they may be beneficial to the protection of evolutionary processes and the environmental systems that are likely to generate future evolutionary diversity

(Lesica and Allendorf 1995, entire). This may be particularly important considering the potential threats of global climate change (see "Climate Change," below). The ability for jaguars in the proposed Northwestern Recovery Unit to utilize physical and biological habitat features in the borderlands region is ecologically important to the recovery of the species; therefore, maintaining connectivity to Mexico is essential to the conservation of the jaguar.

Through an iterative process incorporating new information and expert opinion (as described in the Jaguar Habitat Modeling and Database Update report produced by Sanderson and Fisher (2013, entire)), the Jaguar Recovery Team developed and refined the habitat requirements for jaguars in the proposed Northwestern Recovery Unit. For the portion of this recovery unit encompassing the United States, the habitat features providing jaguar habitat include areas of at least 100 km<sup>2</sup> (38.6 mi<sup>2</sup>) in size (the minimum area necessary to support one jaguar) in which can be found: (1) Tree cover from greater than 1 to 50 percent; (2) intermediately, moderately, or highly rugged terrain; (3) water within 10 km (6.2 mi); (4) an elevation of less than 2,000 meters (m) (6,562 feet (ft)); (5) Sierra Madre Occidental pine-oak forests; and (6) a Human Influence Index (HII) of less than 20 (habitat factors, habitat types, and masks as described in Sanderson and Fisher 2013, pp. 33–34, 38, and 41). Therefore, we are basing our definition of jaguar habitat in the United States on these features (see *Physical or Biological Features*, below).

#### Summary of Changes From Proposed Rule

In developing the final jaguar critical habitat designation, we reviewed public comments received on the proposed rule (77 FR 50214; August 20, 2012), the revision to the proposed rule, the draft economic analysis, and the draft environmental assessment (78 FR 39237; July 1, 2013 and 78 FR 53390; August 29, 2013).

On August 20, 2012, we published in the **Federal Register** a proposed rule to designate critical habitat for the jaguar (77 FR 50214). We based the physical and biological feature and PCEs on a preliminary habitat modeling report we received from the Jaguar Recovery Team in 2011 entitled Jaguar Habitat Modeling and Database (Sanderson and Fisher 2011, pp. 1–11), in which the habitat features preferred by the jaguar in the proposed Northwestern Recovery Unit were described based on the best

available science and expert opinion of the Jaguar Recovery Team at that time.

In our revised proposed rule we modified the critical habitat boundaries based on new information received. Since August 20, 2012, the Jaguar Recovery Team continued to revise and refine the habitat features preferred by the jaguar through an iterative process based on additional information and expert opinion, resulting in an updated habitat modeling report entitled *Jaguar Habitat Modeling and Database Update* (Sanderson and Fisher 2013, entire) that we received on March 12, 2013. Changes to habitat features preferred by jaguars in the proposed Northwestern Recovery Unit included: (1) Defining habitat patches of less than 100 km<sup>2</sup> (38.6 mi<sup>2</sup>) in size as too small to support a jaguar (the physical and biological feature formerly described areas of less than 84 km<sup>2</sup> (32.4 mi<sup>2</sup>) as too small); (2) a canopy cover from greater than 1 to 50 percent as suitable in the northern part of the proposed Northwestern Recovery Unit (PCE 4 formerly included a range of 3 to 40 percent canopy cover); (3) delineating areas 2,000 m (6,562 ft) and higher as unsuitable (previously there was no PCE related to an upper-elevation limit); and (4) slightly diminishing (from up to or equal to 20 to less than 20) the level of the HII tolerated by jaguars in the northern part

of the proposed Northwestern Recovery Unit (formerly PCE 6, now PCE 7). When combined and analyzed with a geographic information system (GIS), these changes added some new areas containing all of the PCEs, while other areas no longer contained all of the PCEs and, therefore, were removed (see *Primary Constituent Elements for Jaguar*, below, for further information). An increase in area was usually due to the increased range in canopy cover (from greater than 1 to 50 percent, instead of 3 to 40 percent), while a decrease in area was usually due to the upper elevation limit of 2,000 m (6,562 ft).

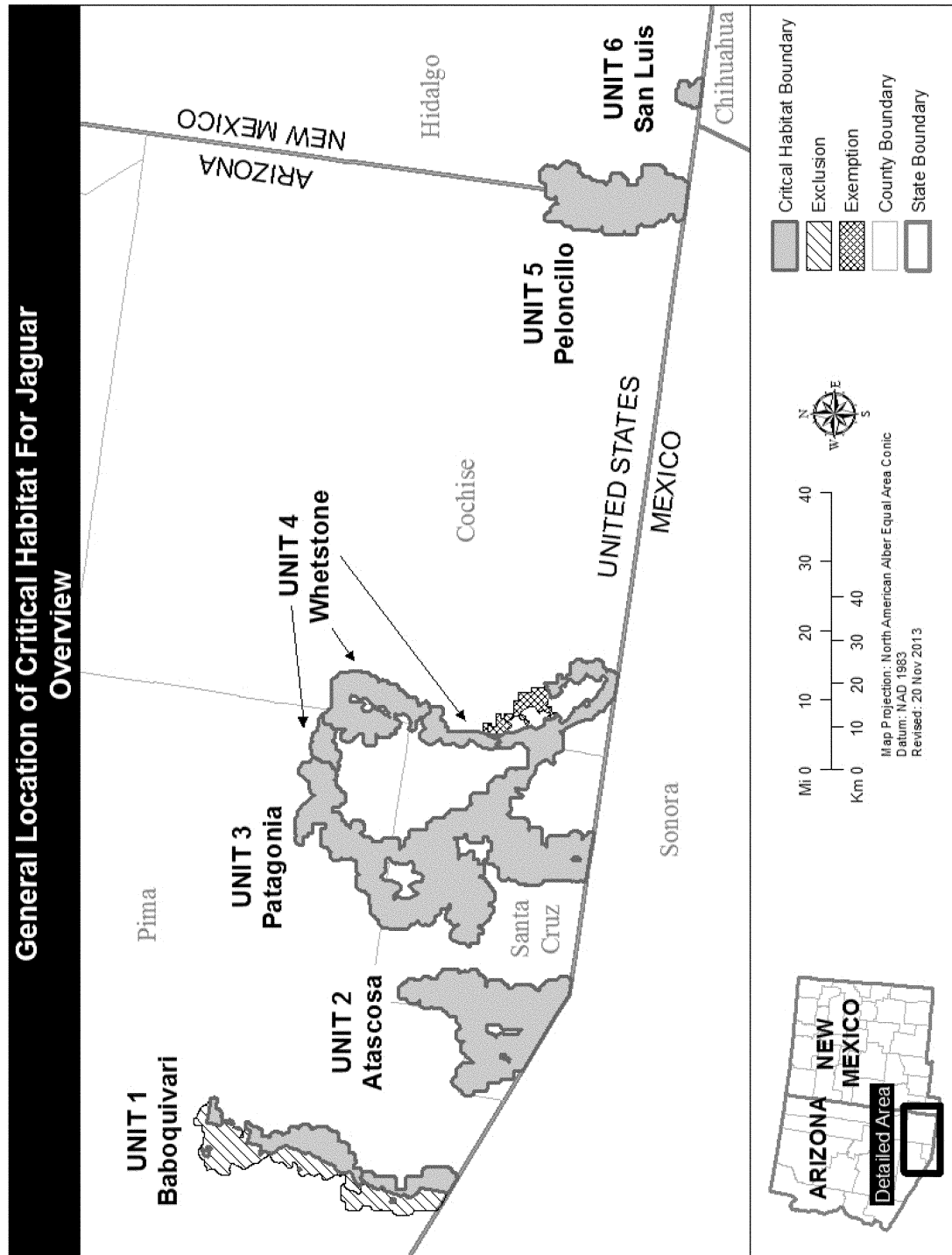
In addition to the changes described above, multiple photos of a jaguar in the Santa Rita Mountains taken since our August 20, 2012 (77 FR 50214), proposed designation provided additional information about the occupancy status of Unit 3 (Patagonia Unit) of jaguar critical habitat, which formerly contained only one jaguar record in the Patagonia Mountains from 1965 (see Table 1 in the "Class I Records" section, below). While our understanding of the habitat features did not change drastically between 2012 and 2013, the combination of a slightly different physical and biological feature and several PCEs (as described above) and the recent jaguar sightings resulted

in the changes noted in our July 1, 2013 (78 FR 39237), proposed rule.

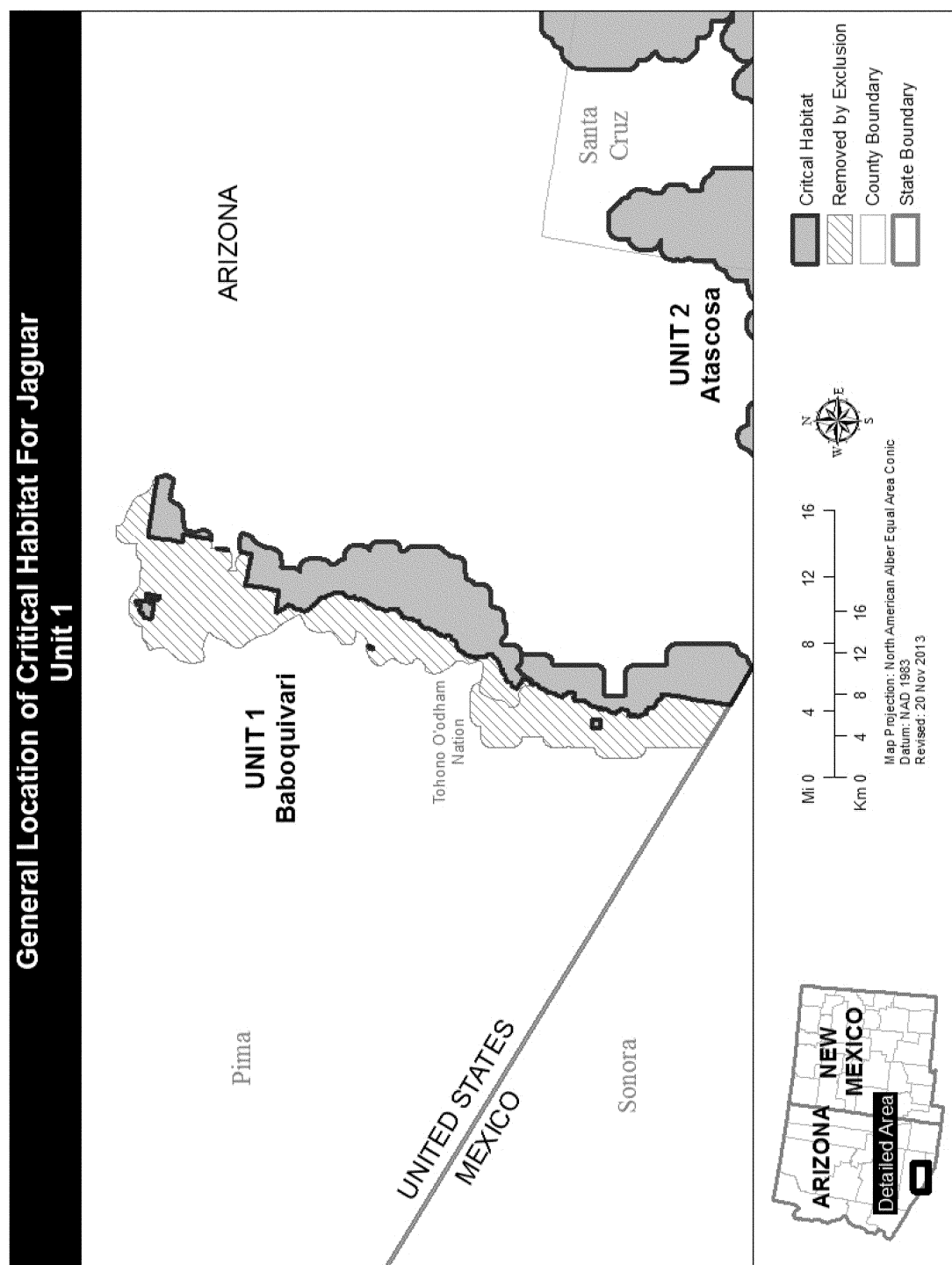
In this final rule we are making the following changes. We are excluding and exempting areas from the final designation pursuant to sections 4(b)(2) and 4(a)(3) of the Act, respectively. We are excluding lands owned and managed by the Tohono O'odham Nation, and we are exempting lands owned and managed by Fort Huachuca. Figure 1 displays the excluded and exempted areas in relation to the final critical habitat designation. The exclusion of Tohono O'odham Nation lands in Unit 1 resulted in the appearance of five disconnected areas of land in Subunit 1a and of two disconnected areas of land in Subunit 1b. Figure 2 is a magnified view of Unit 1 displaying the excluded areas in relation to critical habitat for Unit 1. These areas that appear disconnected are not in fact disjunct, as there is continued jaguar habitat within the excluded areas that provides continuity and connectivity among the areas that appear disconnected. The exemption of Fort Huachuca did not result in the appearance of any disconnected areas. (See the Final Critical Habitat Designation section, below, for additional information).

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**FIGURE 1.—Overview of critical habitat for the jaguar showing areas that have been exempted and excluded from the designation.**



**FIGURE 2.—Critical habitat for the jaguar in Unit 1 showing areas that have been excluded from the designation.**



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#### 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 to 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 part 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 (primary constituent elements such as roost sites, nesting grounds, seasonal wetlands, water quality, tide, soil type) that are essential to the conservation of the species. 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.

Under the second part 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 to the conservation of the species. For example, an area currently occupied by the species but that was not occupied at the time of listing may be essential to the conservation of the species and 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.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific 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 species 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) section 9 of the Act's prohibitions 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.

In the following sections we will define the regulatory terms in the definition of critical habitat, as they apply to the jaguar, and then explain how the critical habitat boundaries were developed based on the application of these terms.

#### *Occupied Area at the Time of Listing*

Determining jaguar occupancy at the time of listing is particularly difficult. Jaguars were added to the list many years ago, and, by nature, are cryptic

and difficult to detect, so assuming an area is occupied or unoccupied must be based on limited information that can be interpreted in several ways. Based on our analysis, we are including areas as occupied that contain an undisputed Class I record at some time between 1962 to the present (September 11, 2013). However, we acknowledge the uncertainty and lack of concrete information (undisputed Class I records, described below) during the period we are defining as occupied at the time of listing. Therefore, we have further evaluated these areas and have also determined these areas to be essential to the conservation of the jaguar. Our rationale for this approach is explained in the following sections.

#### Class I Records

Reports of jaguar sightings are sorted into multiple “classes” based on the degree of certainty that a jaguar was sighted. We are only considering undisputed Class I reports as valid records of jaguar locations. Class I reports are those for which some sort of physical evidence is provided for verification (such as a skin, skull, or photograph); they are considered “verified” or “highly probable” as evidence for a jaguar occurrence. Class II records have detailed information of the observation provided but do not include any physical evidence of a jaguar. Class II observations are considered “probable” or “possible” as

evidence for a jaguar occurrence. This classification protocol was developed by adapting criteria published by Tewes and Everett (1986, entire), based on work in Texas with jaguarundis and ocelots (*Leopardus pardalis*). The Arizona-New Mexico Jaguar Conservation Team (for a description and history of this team, see Johnson *et al.* 2011, pp. 37–40) reviewed and endorsed the protocol in 1998 for use in evaluating jaguar occurrence reports for Arizona and New Mexico. Therefore, we are using the same criteria to evaluate jaguar occurrence reports in the United States, and consider undisputed Class I records as the best available information. Table 1 summarizes these records, below.

**TABLE 1—UNDISPUTED CLASS I \* JAGUAR RECORDS FOR ARIZONA AND NEW MEXICO USED FOR PURPOSES OF DETERMINING OCCUPANCY OF JAGUAR CRITICAL HABITAT, 1962–SEPTEMBER 11, 2013**

Date	Collector	Sex	Location	Circumstance/docu- mentation	Biotic community	Information source
2013: 9/11, 8/1, 6/17, 5/31, 5/29, 5/17, 5/ 11, 4/27, 1/16.	University of Arizona	Male (same as 2011 male based on pelage compari- son).	Santa Rita Moun- tains.	Trail camera photo- graphs.	Madrean evergreen woodland, semidesert grass- land.	USFWS Flickr site: <a href="http://bit.ly/TapYhK">http://bit.ly/ TapYhK</a> .
2012: 12/31, 11/11, 11/10, 10/25.	University of Arizona	Male (same as 2011 male based on pelage compari- son).	Santa Rita Moun- tains.	Trail camera photo- graphs.	Madrean evergreen woodland, semidesert grass- land.	USFWS Flickr site: <a href="http://bit.ly/TapYhK">http://bit.ly/ TapYhK</a> .
2012: 9/23 .....	AGFD .....	Male (same as 2011 male based on pelage compari- son).	Santa Rita Moun- tains.	Trail camera photo- graph.	Semidesert grass- land.	USFWS: <a href="http://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/Jaguar/fNR-jaguar-pics_Dec_2012B.docx.pdf">http://www. fws.gov/southwest/ es/arizona/Docu- ments/Species Docs/Jaguar/fNR- jaguar-pics_Dec_ 2012B.docx.pdf</a> .
2011: 11/19 .....	D Fenn .....	Male (5th unique AZ- NM jaguar since 1996).	Whetstone Moun- tains.	Treed by hunting dogs; photos and video.	Madrean evergreen woodland.	AGFD: <a href="http://www.azgfd.gov/w_c/jaguar/documents/Web%20Release%20jag%20reports%202012.02.24.pdf">http:// www.azgfd.gov/w_ c/jaguar/docu- ments/Web%20 Release%20jag %20reports%20 2012.02.24.pdf</a> .
2008: 8/2 .....	J Childs and E McCain.	Male (Macho B) .....	Atascosa Mountains	Trail camera photo- graph.	Madrean evergreen woodland.	J Childs and E McCain, BJD unpubl. data.
2008: 7/29 .....	J Childs and E McCain.	Unknown or Male (Macho B).	Tumacacori Moun- tains.	Trail camera photo- graph (photo too fuzzy to identify jaguar).	Semidesert grass- land.	J Childs and E McCain, BJD unpubl. data.
2007: 7/25, 5/7, 4/25, 4/22, 4/21, 4/3, 3/27, 3/26, 3/25, 3/7, 2/22, 2/12, 2/9, 1/25, 1/22, 1/19, 1/10, 1/1.	J Childs and E McCain.	Male (Macho B) .....	Coyote Mountains, Baboquivari Moun- tains.	Trail camera photo- graphs, video, tracks.	Madrean evergreen woodland, semidesert grass- land.	J Childs and E McCain, BJD unpubl. data; see also McCain and Childs 2008, pp. 3, 7.
2007: 2/22 .....	J Childs and E McCain.	Male (Macho B) .....	Baboquivari Moun- tains.	500-lb calf depreda- tion.	Madrean evergreen woodland.	J Childs and E McCain, BJD unpubl. data; see also McCain and Childs 2008, pp. 3, 7.
2006: 12/29, 12/3, 11/ 20, 10/18, 10/15, 9/ 26, 6/9, 5/31, 5/27, 5/23, 5/21, 5/14, 5/ 13, 5/12, 5/10, 5/6, 5/5, 5/4, 5/2, 4/30, 4/ 28, 4/27, 4/23, 4/18, 4/3, 3/30, 3/27, 3/26.	J Childs and E McCain.	Male (Macho B) .....	Coyote Mountains, Baboquivari Moun- tains, Atascosa Mountains.	Trail camera photo- graphs, video, tracks.	Madrean evergreen woodland, semidesert grass- land, Sonoran desertscrub.	J Childs and E McCain, BJD unpubl. data; see also McCain and Childs 2008, pp. 3, 7.
2006: 2/20 .....	W Glenn .....	Male (4th unique AZ- NM jaguar since 1996).	South of Animas Mountains on north end of San Luis Mountains.	Photographs .....	Madrean evergreen woodland.	AGFD unpubl. data; Childs and Childs 2008, p. 95.

TABLE 1—UNDISPUTED CLASS I\* JAGUAR RECORDS FOR ARIZONA AND NEW MEXICO USED FOR PURPOSES OF DETERMINING OCCUPANCY OF JAGUAR CRITICAL HABITAT, 1962–SEPTEMBER 11, 2013—Continued

Date	Collector	Sex	Location	Circumstance/docu- mentation	Biotic community	Information source
2005: 12/17, 12/12, 11/18, 11/17, 11/16, 11/6, 11/5, 11/4, 7/29, 7/28, 7/26, 7/3, 6/8, 6/3, 1/12, 1/2.	J Childs and E McCain.	Male (Macho B) .....	Tumacacori Mountains, Atascosa Mountains.	Trail camera photographs and tracks.	Madrean evergreen woodland, semidesert grassland.	J Childs and E McCain, BJDp unpubl. data; see also McCain and Childs 2008, pp. 3, 7.
2005: 9/26, 7/11 .....	J Childs and E McCain.	Unknown .....	Atascosa Mountains	Tracks .....	Madrean evergreen woodland.	J Childs and E McCain, BJDp unpubl. data; see also McCain and Childs 2008, pp. 3, 7.
2004: 12/31, 12/29, 12/27, 12/19, 12/17, 12/12, 11/28, 11/8, 10/27, 9/26, 8/31.	J Childs and E McCain.	Male (Macho B) .....	Atascosa Mountains	Trail camera photographs and track.	Madrean evergreen woodland, semidesert grassland.	J Childs and E McCain, BJDp unpubl. data; see also McCain and Childs 2008, pp. 3, 7.
2004: 12/7, 9/12, 6/24	J Childs and E McCain.	Unknown (possibly Macho A or possible 6th unique AZ-NM jaguar since 1996).	Atascosa Mountains	Trail camera photographs and track.	Madrean evergreen woodland.	J Childs and E McCain, BJDp unpubl. data; see also McCain and Childs 2008, pp. 3, 7; and McCain and Childs 2008, p. 5 for a description of why this individual could be Macho A or possibly another unique jaguar.
2004: 9/25 .....	J Childs and E McCain.	Male (Macho A) .....	Atascosa Mountains	Trail camera photograph.	Madrean evergreen woodland.	J Childs and E McCain, BJDp unpubl. data; see also McCain and Childs 2008, pp. 3, 7.
2003: 8/7 .....	J Childs and E McCain.	Male (Macho A) .....	Atascosa Mountains	Trail camera photograph.	Madrean evergreen woodland.	J Childs and E McCain, BJDp unpubl. data; see also McCain and Childs 2008, pp. 3, 7.
2001: 12/9 .....	J Childs and E McCain.	Male (Macho A; 3rd unique jaguar since 1996).	Atascosa Mountains	Trail camera photograph.	Madrean evergreen woodland.	J Childs and E McCain, BJDp unpubl. data; see also McCain and Childs 2008, pp. 3, 7.
1996: 8/31 .....	J Childs .....	Male (Macho B; 2nd unique AZ-NM jaguar since 1996).	Baboquivari Mountains.	Treed while lion hunting; photographs.	Madrean evergreen woodland.	Brown and López González 2001, p. 7, McCain and Childs 2008, p. 2.
1996: 3/7 .....	W Glenn .....	Male (1st unique AZ-NM jaguar since 1996).	Peloncillo Mountains	Bayed while lion hunting with dogs; photographs.	Madrean evergreen woodland.	Glenn 1996; Brown and López González 2001, p. 6.
1995: 4/19 .....	B Starrett .....	Unknown .....	Peloncillo Mountains	Photograph of track	Madrean evergreen woodland.	AGFD unpubl. data; NMDGF unpubl. data.
1986: 12 .....	J Klump .....	Male .....	Dos Cabezas Mountains.	Bayed and killed while lion hunting with dogs.	Madrean evergreen woodland.	Brown and López González 2001, p. 7.
1971: 11/16 .....	R Farley and T Cartier.	Male .....	Santa Cruz River .....	Killed by boys duck hunting with shot-guns.	Madrean evergreen woodland, semidesert grassland.	Brown and López González 2001, p. 7.
1965: 11/16 .....	L McGee .....	Male .....	Patagonia Mountains	Shot while deer hunting.	Madrean evergreen woodland.	Brown and López González 2001, p. 7.

\* Physical evidence (e.g., skin, skull, photograph, track) was reviewed and accepted by the Arizona Game and Fish Department (AGFD), New Mexico Department of Game and Fish (NMDGF), or other credible person(s). (BJDP=Borderlands Jaguar Detection Project).

There are several disputed Class I jaguar records from 1962 forward that we are not considering in our analysis. One of these is a female shot on

September 28, 1963, in the White Mountains of east-central Arizona, and another is a male trapped on January 16, 1964, near the Black River in east-

central Arizona (Brown and López González 2001, p. 7). As described in Johnson *et al.* (2011, p. 9), as well as from information provided during the

public comment period on our August 20, 2012, proposed critical habitat designation (77 FR 50214), the validity of these locations is questionable because of the suspicion that these animals were released for “canned hunts” (hunts involving release of captive animals). Therefore, we are not including them as undisputed Class I records. The other exceptions are any records of the jaguar known as Macho B dating from October 3, 2008, until his final capture on March 2, 2009. We have determined that it is within this timeframe that female jaguar scat may have been used as scent lure at some trail camera locations within the Coronado National Forest that may have affected his behavior; therefore, we are not including these observations as undisputed Class I records.

#### *Time of Listing*

While the jaguar was not explicitly listed in the United States until July 22, 1997 (62 FR 39147), we are using the date the jaguar was listed throughout its range as endangered in accordance with the Endangered Species Conservation Act, which is March 30, 1972 (37 FR 6476). Our rationale for using this date is based on our July 25, 1979, publication (44 FR 43705) in which we asserted that it was always the intent of the Service that all populations of seven species, including the jaguar, deserved to be listed as endangered, whether they occurred in the United States or in foreign countries. Therefore, our intention was to consider the jaguar endangered throughout its entire range when it was listed as endangered in 1972, rather than only outside of the United States.

#### *Occupancy at the Time of Listing*

We are including areas in which reports of jaguar exist during the 10 years prior to its listing as occupied at the time of listing, meaning we are considering records back to 1962. Our rationale for including these records is based on expert opinion regarding the average lifespan of the jaguar, the consensus being 10 years. Therefore, we assume that areas that would have been considered occupied at the time of listing would have included sightings 10 years prior to its listing, as presumably these areas were still inhabited by jaguars when the species was listed in 1972.

For this same reason, we are including areas as occupied at the time of listing in which reports of jaguar exist during the 10 years after listing, meaning we are considering records up to 1982. If jaguars were present in an area within 10 years after the time of

listing (1972), presumably these areas would have been inhabited by jaguars when the species was listed in 1972.

Additionally, we are including areas as occupied in which reports of jaguars exist from 1982 to the present. Our reasoning for including areas in which sightings have occurred after 1982 is that it is likely those areas were occupied at the time of the original listing, but jaguars had not been detected because of their rarity, the difficulty in detecting them, and a lack of surveys for the species, as described below.

#### *Reduced Jaguar Numbers*

By the time the jaguar was listed in 1972, the species was rare within the United States, making those individuals that may have been present more difficult to detect. The gradual decline of the jaguar in the southwestern United States was concurrent with predator control measures associated with the settlement of land and the development of the cattle industry (Brown 1983, p. 460). For example, from 1900 to 1949, 53 jaguars were recorded as killed in the Southwest, whereas only 4 were recorded as killed between 1950 and 1979 (Brown 1983, p. 460). When a species is rare on the landscape, individuals are difficult to detect because they are sparsely distributed over a large area (McDonald 2004, p. 11).

Jaguars, in particular, are territorial and require expansive open spaces for each individual, meaning large areas may be occupied by just a few individuals, thus reducing the likelihood of detecting them. As evidence, only six, possibly seven, individual jaguars have been detected in the United States since 1982 (five, possibly six, individuals since 1996, as well as the jaguar shot in the Dos Cabezas Mountains in 1986; see Table 1, above), including two that have been documented utilizing two distinct mountain ranges, one of which encompassed approximately 1,359 km<sup>2</sup> (525 mi<sup>2</sup>) (McCain and Childs 2008, entire) (see “Space for Individual and Population Growth and for Normal Behavior” section, below). Therefore, we believe that undisputed Class I records within mountain ranges from 1982 to the present indicate that these mountain ranges were likely occupied by transient jaguars from Mexico at the time the species was listed, but individuals remained undetected due to the jaguar’s ability to move long distances within and between mountain ranges.

#### *Jaguar Detection Difficulty*

In addition to lowered detection probabilities (the probability of detecting a jaguar when present) resulting from the rarity of animals, many mobile species are difficult to detect in the wild because of morphological features (such as camouflaged appearance) or elusive behavioral characteristics (such as nocturnal activity) (Peterson and Bayley 2004, pp. 173, 175), as is the case for the jaguar. This fact presents challenges in determining whether or not a particular area is occupied because we cannot be sure that a lack of detection indicates that the species is absent (Peterson and Bayley 2004, p. 173).

For example, the Sonoran desert tortoise is difficult to monitor in the wild because of its slow movement and camouflaged appearance, especially in the smaller hatchling and juvenile age classes. In addition, the habitat in which Sonoran desert tortoise population densities are the highest is complex, meaning it often contains many large boulders, somewhat dense vegetation, and challenging topographic relief. These factors can significantly hamper a surveyor’s ability to detect them in the field (Zylstra *et al.* 2010, p. 1311).

#### *Sampling Method Difficulty*

Jaguars are difficult to detect due to their rarity, cryptic appearance, elusive behavior, and habitat complexity. Compounding the problem of low detection rates is that not all individuals can be detected using any one particular sampling method or even using multiple methods. Pollock *et al.* (2004, p. 43) present the example of the dugong (sea cow) off the coast of Australia. Using one method of detection—aerial surveys—some dugongs may be underwater and invisible to the observers searching for them from aircraft, or the observer may miss detecting them due to his or her uncertain perception process. Similarly, terrestrial salamanders in North Carolina and Tennessee most often occur below the surface of the ground, making detection particularly difficult, especially when using standard sampling protocols that only sample the surface population (Pollock *et al.* 2004, p. 53). Attempting to detect rare species by using multiple sampling methods or surveying multiple times can increase detections or increase confidence that non-detections are true absences; however, this is often prohibitively time-consuming and expensive and may not always be feasible because of the sensitivity of the species.

Jaguars, specifically, are secretive and nocturnal in nature (Seymour 1989, p. 2; 62 FR 39147, p. 39153; McCain and Childs 2008, p. 5) and, in the United States and northern Mexico, inhabit rugged, remote areas that are logistically difficult to survey. Even in studies designed to detect jaguars using both camera traps and track surveys in northern Mexico, neither method was completely effective in identifying individuals due to logistical problems related to rugged topography, hard soils, absence of roads, and harsh weather conditions (Rosas-Rosas and Bender 2012, pp. 95–96). In the United States specifically, most of the recent occurrences of jaguars (after 1996) would not have been known but for a substantial amount of time and effort being invested by the Borderlands Jaguar Detection Project (BJDP) (Johnson *et al.* 2011, p. 40). From 1997 to 2010, the BJDP maintained 45–50 remote-camera stations across three counties in Arizona, conducted track and scat (feces) surveys opportunistically, and followed up on credible sighting reports from other individuals, resulting in 105 jaguar locations representing two adult male jaguars and possibly a third of unknown sex (Johnson *et al.* 2011, p. 40). From the time the jaguar was listed in 1972 until 1997, no effort was made to detect jaguars in the United States, so we cannot be sure that a lack of detection indicates the species was absent.

#### Summary

Based on the above information, we determine that areas in which jaguars have been documented from 1962 to the present may have been occupied at the time of the original listing (March 30, 1972; 37 FR 6476) because: (1) Jaguars were rare on the landscape and distributed over large, rugged areas, meaning they were difficult to detect; (2) jaguars are cryptic and nocturnal by nature, making them difficult to detect; and (3) no survey effort was made to detect them in 1972, meaning we cannot be sure that a lack of detection indicates the species was absent. Therefore, based on the best available information related to jaguar rarity, biology, and survey effort, we determine that areas containing undisputed Class I records from 1962 to the present (September 11, 2013) may have been occupied by jaguars at the time of listing.

#### Occupancy Uncertainty

To the extent that uncertainty exists regarding our analysis of these data, we acknowledge there is an alternative explanation as to whether or not these areas were occupied at the time the

jaguar was listed in 1972 (37 FR 6476). The lack of jaguar sightings at that time, as well as some expert opinions cited in our July 22, 1997, clarifying rule (62 FR 39147) (for example, Swank and Teer 1989), suggest that jaguars in the United States had declined to such an extent by that point as to be effectively eliminated. Therefore, an argument could be made that no areas in the United States were occupied by the species at the time it was listed, or that only areas containing undisputed Class I records from between 1962 and 1982 were occupied.

For this reason, we also analyzed whether or not these areas are essential to the conservation of the species. Through our analysis, we determine that they are essential to the conservation of the species for the following reasons: (1) They have demonstrated recent (since 1996) occupancy by jaguars; (2) they contain features that comprise jaguar habitat; and (3) they contribute to the species' persistence in the United States by allowing the normal demographic function and possible range expansion of the Northwestern Recovery Unit, which is essential to the conservation of the species (as discussed in the *Jaguar Recovery Planning in Relation to Critical Habitat* section, above).

#### Physical or Biological Features

In accordance with sections 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.

We derive the specific physical or biological features essential for the jaguar from studies of this species' habitat, ecology, and life history as described in the Critical Habitat section of the proposed rule to designate critical habitat published in the **Federal Register** on August 20, 2012 (77 FR

50214), in the proposed revision of critical habitat published in the **Federal Register** on July 1, 2013 (78 FR 39237), and in the information presented below. Additional information can be found in the final clarifying rule published in the **Federal Register** on July 22, 1997 (62 FR 39147), the Recovery Outline for the Jaguar (Jaguar Recovery Team 2012, entire), the Digital Mapping in Support of Recovery Planning for the Northern Jaguar report (Sanderson and Fisher 2011, pp. 1–11), and the Jaguar Habitat Modeling and Update report (Sanderson and Fisher 2013, entire). We used the best scientific information available on habitat in the United States essential to the conservation of the jaguar as gathered by the Jaguar Recovery Team through the team's recovery planning effort. A complete list of information sources is available in our Literature Cited located on <http://www.regulations.gov> at Docket No. FWS–R2–ES–2012–0042 and at the field office responsible for the designation (see **FOR FURTHER INFORMATION CONTACT** above).

To define the physical and biological features required for jaguar habitat in the United States, we reviewed available information and supporting data that pertains to the habitat requirements of the jaguar, focusing on studies conducted in Mexico as close to the U.S.-Mexico border as available. Many of these studies have been compiled and summarized by the Jaguar Recovery Team in the Recovery Outline for the Jaguar (Jaguar Recovery Team 2012, entire), the 2011 Digital Mapping in Support of Recovery Planning for the Northern Jaguar preliminary report (Sanderson and Fisher 2011, pp. 1–11) and the 2013 Jaguar Habitat Modeling and Update report (Sanderson and Fisher 2013, entire), which we regard as the best available scientific information for the jaguar and its habitat needs in the northern portion of its range. To define the physical and biological features and associated PCEs required for jaguar habitat in the United States, we relied primarily on information compiled in the Jaguar Habitat Modeling and Database Update report (Sanderson and Fisher 2013, entire). In two cases we substituted data layers for which more detailed, higher-resolution data were available for the United States (see “Cover or Shelter” and “Habitats that are Protected from Disturbance or are Representative of the Historical, Geographical, and Ecological Distributions of a Species” sections, below). For a complete list of data sources, see our response to comment number 63 in our Summary of

## Comments and Recommendations section.

We have determined that the jaguar requires the following physical or biological feature as further described below: Expansive open spaces in the southwestern United States with adequate connectivity to Mexico that contain a sufficient native prey base and available surface water, have suitable vegetative cover and rugged topography to provide sites for resting, are below 2,000 m (6,562 feet (ft)), and have minimal human impact.

## Space for Individual and Population Growth and for Normal Behavior

*Expansive open spaces*—Jaguars require a significant amount of space for individual and population growth and for normal behavior. Jaguars have relatively large home ranges and, according to Brown and López González (2001, p. 60), their home ranges are highly variable and depend on topography, available prey, and population dynamics. Home ranges need to provide reliable surface water, available prey, and sites in rugged terrain for resting that are removed from the impacts of human activity and influence (Jaguar Recovery Team 2012, pp. 15–16). The availability of these habitat characteristics can fluctuate within a year (dry versus wet seasons) and between years (drought years versus wet years).

Specific home ranges for jaguars depend on the sex of the individual, season, and vegetation type. The home ranges of borderland jaguars are presumably as large or larger than the home ranges of tropical jaguars (Brown and López González 2001, p. 60; McCain and Childs 2008, pp. 6–7), as jaguars in this area are at the northern limit of their range and the arid environment contains resources and environmental conditions that are more variable than those in the tropics (Hass 2002, as cited in McCain and Childs 2008, p. 6). Therefore, jaguars require more space in arid areas to obtain essential resources such as food, water, and cover (discussed below).

Only one limited home range study using standard radio-telemetry techniques and two home range studies using camera traps have been conducted for jaguars in northwestern Mexico. Telemetry data from one adult female tracked for 4 months during the dry season in Sonora indicated a home range size of 100 km<sup>2</sup> (38.6 mi<sup>2</sup>) (López González 2011, pers. comm.). Additionally, a male in Sonora was documented through camera traps using an average home range of 84 km<sup>2</sup> (32 mi<sup>2</sup>) (López González 2011, pers.

comm.). No home range studies using standard radio-telemetry techniques have been conducted for jaguars in the southwestern United States, although McCain and Childs (2008, p. 5), using camera traps, reported one jaguar in southeastern Arizona as having a minimum observed “range” of 1,359 km<sup>2</sup> (525 mi<sup>2</sup>) encompassing two distinct mountain ranges. This study, however, was not designed to determine home range size. Therefore, we are relying on minimum home-range estimates for male and female jaguars from Sonora, Mexico (López González 2011, pers. comm.), as well as the expert opinion of the technical subgroup of the Jaguar Recovery Team, which came to the consensus that areas less than 100 km<sup>2</sup> (38.6 mi<sup>2</sup>) were too small to support a jaguar (Sanderson and Fisher 2013, p. 30) for the minimum amount of adequate habitat required by jaguars in the United States.

Therefore, based on the information above, we identify expansive open spaces in the United States of at least 100 km<sup>2</sup> (38.6 mi<sup>2</sup>) in size as an essential component of the physical or biological feature essential for the conservation of the jaguar in the United States.

*Connectivity between expansive open spaces in the United States and Mexico*—As discussed in the *Jaguar Recovery Planning in Relation to Critical Habitat* section, above, connectivity between the United States and Mexico is essential for the conservation of jaguars. Therefore, we identify connectivity between expansive open spaces in the United States and Mexico as an essential component of the physical or biological feature essential for the conservation of the jaguar in the United States.

*Connectivity between expansive open spaces within the United States*—We know that connectivity between expansive open areas of habitat for the jaguar in the United States is necessary if viable habitat for the jaguar is to be maintained. This is particularly true in the mountainous areas of Arizona and New Mexico, where isolated mountain ranges providing the physical and biological feature of jaguar habitat are separated by valley bottoms that may not possess the feature described in this final rule. However, we also know that, based on home range sizes and research and monitoring, jaguars will use valley bottoms (for example, McCain and Childs 2008, p. 7) and other areas of habitat connectivity to move among areas of higher quality habitat found in isolated mountain ranges. We acknowledge that jaguars use connective areas to move between mountain ranges

in the United States; however, as they are mainly using them for passage, jaguars do not linger in these areas. As a result, there is only one occurrence record of a jaguar in these areas. With only one record, we are unable to describe the features of these areas because of a lack of information.

Therefore, while we acknowledge that habitat connectivity within the United States is important, the best available scientific and commercial information does not allow us to determine that any particular area within the valleys is essential, and all of the valley habitat is not essential to the conservation of the species. Therefore we are not designating any areas within the valleys between the montane habitat as critical habitat.

## Food, Water, Air, Light, Minerals, or Other Nutritional or Physiological Requirements

*Food*—Jaguar and large-cat experts believe that high-quality habitat for jaguars in the northwestern portion of their range should include a high abundance of native prey, particularly large prey like white-tailed deer and collared peccary (javelina), as well as an adequate number of medium-sized prey (Jaguar Recovery Team 2012, pp. 15–16). However, the Jaguar Recovery Team (2012, pp. 15–16) did not quantify “high abundance” or “adequate number” of each type of prey, making it difficult to state the density of prey required to sustain a resident jaguar in this portion of its range.

Jaguars usually catch and kill their prey by stalking or ambush and biting through the nape as do most Felidae (members of the cat family) (Seymour 1989, p. 5). Like other large cats, jaguars rely on a combination of cover, surprise, acceleration, and body weight to capture their prey (Schaller 1972 and Hopcraft *et al.* 2005, as cited by Cavalcanti 2008, p. 47). Jaguars are considered opportunistic feeders, and their diet varies according to prey density and ease of prey capture (sources as cited in Seymour 1989, p. 4). Jaguars equally use medium- and large-size prey, with a trend toward use of larger prey as distance increases from the equator (López González and Miller 2002, p. 218).

In northeastern Sonora, where the northernmost breeding population of jaguars occurs, Rosas-Rosas (2006, pp. 24–25) found that large prey greater than 10 kilograms (kg) (22 pounds (lb)) accounted for more than 80 percent of the total biomass consumed. Specifically, cattle accounted for more than half of the total biomass consumed (57 percent), followed by white-tailed

deer (23 percent), and collared peccary (5.12 percent). Medium-sized prey (1–10 kg; 2–22 lb), including lagomorphs (rabbit family) and coatis (*Nasua nasua*), accounted for less than 20 percent of biomass. Small prey, less than 1 kg (2 lb), were not found in scats (Rosas-Rosas 2006, p. 24). At the Chamela-Cuixmala Biosphere Reserve in Jalisco, Mexico (which is closed to livestock grazing), deer and javelina were the two most preferred prey species for jaguars, with jaguars consuming the equivalent of 85 deer per individual per year (Brown and López González 2001, p. 51). No estimates of the number of javelina consumed were provided, although in combination with deer, armadillo, and coati, these four prey items provided 98 percent of the biomass taken by jaguars (Brown and López González 2001, p. 50). Most jaguar experts believe that collared peccary and deer are mainstays in the diet of jaguars in the United States and Mexico borderlands (62 FR 39147), although other available prey, including coatis, skunk (*Mephitis* spp., *Spilogale gracilis*), raccoon (*Procyon lotor*), jackrabbit (*Lepus* spp.), domestic livestock, and horses are taken as well (Brown and López González 2001, p. 51; Hatten *et al.* 2005, p. 1024; Rosas-Rosas 2006, p. 24).

Therefore, based on the information above, we identify areas containing adequate numbers of native prey, including deer, javelina, and medium-sized prey items (such as coatis, skunks, raccoons, or jackrabbits) as an essential component of the physical and biological feature essential for the conservation of the jaguar in the United States.

**Water**—Several studies have demonstrated that jaguars require surface water within a reasonable distance year-round. This requirement likely stems from increased prey abundance at or near water sources (Cavalcanti 2008, p. 68; Rosas-Rosas *et al.* 2010, pp. 107–108), particularly in arid environments, although it is conceivable that jaguars require a nearby water source for drinking, as well. Seymour (1989, p. 4) found that jaguars are most commonly found in areas with a water supply, although the distance to this water supply is not defined. In northeastern Sonora, Mexico, Rosas-Rosas *et al.* (2010, p. 107) found that sites of jaguar cattle kills were positively associated with proximity to permanent water sources. They also found that these sites were positively associated with proximity to roads, but concluded that the effect of roads likely represented a response to major drainages, as roads generally

followed major drainages within their study area.

In the United States, Hatten *et al.* (2005, p. 1026) analyzed distance to water as a feature of jaguar habitat using jaguar records from Arizona dating from 1900 to 2002, from which they selected the most reliable records (those with physical evidence or from a reliable witness) and most spatially accurate records (those with spatial errors of less than 8 km (5 mi)) to create a habitat suitability model. Of the 57 records they considered, 25 records were deemed reliable and accurate enough to include in the model. Using a digital GIS layer that included perennial and intermittent water sources (streams, rivers, lakes, and springs), Hatten *et al.* (2005, p. 1029) found that when perennial and intermittent water sources were combined, 100 percent of the 25 jaguar records used for their model were within 10 km (6.2 mi) of a water source. This distance from water (10 km; 6.2 mi) was then incorporated into a jaguar habitat modeling exercise in New Mexico (Menke and Hayes 2003, pp. 15–16), as well.

In the jaguar habitat models developed by Sanderson and Fisher (2011, pp. 10–11; 2013, pp. 33–34) for the proposed Northwestern Recovery Unit, 10 km (6.2 mi) was also determined to be the maximum distance from water that could still provide jaguar habitat. In addition, this distance was further acknowledged by the technical subgroup of the Jaguar Recovery Team as the maximum distance an area could be from a year-round water source to constitute high-quality jaguar habitat (Jaguar Recovery Team 2012, pp. 15–16).

Therefore, based on the information above, we identify sources of surface water within at least 20 km (12.4 mi) of each other such that a jaguar would be within 10 km (6.2 mi) of a water source at any given time (i.e., if it were halfway between these water sources) as an essential component of the physical or biological feature essential for the conservation of the jaguar in the United States.

#### Cover or Shelter

**Vegetative Cover**—Jaguars require vegetative cover allowing them to stalk and ambush prey, as well as providing areas in which to den and rest (Jaguar Recovery Team 2012, pp. 15–16). Jaguars are known from a variety of vegetation communities (Seymour 1989, p. 2), sometimes called biotic communities or vegetation biomes (Brown 1994, p. 9). Jaguars have been documented in arid areas in northwestern Mexico and the

southwestern United States, including thornscrub, desertscrub, lowland desert, mesquite grassland, Madrean oak woodland, and pine-oak woodland communities (Brown and López González 2001, pp. 43–50; Boydston and López González 2005, p. 54; McCain and Childs 2008, p. 7; Rosas-Rosas *et al.* 2010, p. 103). As most of the information pertaining to jaguar habitat in the U.S.-Mexico borderlands relies on descriptions of biotic communities from Brown and Lowe (1980, map) and Brown (1994, entire, including appendices), for purposes of this document we are using these same sources and descriptions, as well.

According to Brown and López González (2001, p. 46), the most important biotic community for jaguars in the southwestern borderlands (Arizona, New Mexico, Sonora, Chihuahua) is Sinaloan thornscrub (as described in Brown 1994, pp. 100–105), with 80 percent of the jaguars killed in the state of Sonora documented in this vegetation biome (Brown and López González 2001, p. 48). This biotic community, however, is absent in the United States (Brown and Lowe 1980, map; Brown and López González 2001, p. 49). Madrean evergreen woodland is also important for borderlands jaguars; nearly 30 percent of jaguars killed in the borderlands region were documented in this biotic community (Brown and López González 2001, p. 45). Brown and López González (2000, p. 538) indicate jaguars in Arizona and New Mexico predominantly use montane environments, probably because of more amiable temperatures and prey availability. A smaller, but still notable, number of jaguars were killed in chaparral and shrub-invaded semidesert grasslands (Brown and López González 2001, p. 48). In Arizona, approximately 15 percent of the jaguars taken within the State between the years 1900 and 2000 were in semidesert grasslands (Brown and López González 2001, p. 49).

The more recent sightings (2001–2007), as described in McCain and Childs (2008, pp. 3, 7), document jaguars in these same biotic communities (note that the Madrean evergreen woodland and semidesert grassland biotic communities encompass mesquite grassland, Madrean oak woodland, and pine-oak woodland habitats), and the most recent sightings of a jaguar in Arizona (2011–2013) were in Madrean evergreen woodland, as well (see Table 1 in the “Class I Records” section, above).

Several modeling studies incorporating vegetation characteristics have attempted to refine the general

understanding of habitats that have been or might be used by jaguars in the United States. To characterize vegetation biomes, Hatten *et al.* (2005, entire) used a digital vegetation layer based on Brown and Lowe (1980, map) and Brown (1994, entire). They found that 100 percent of the 25 jaguar records used for their model were observed in four vegetation biomes, including: (1) Scrub grasslands of southeastern Arizona (56 percent); (2) Madrean evergreen forest (20 percent); (3) Rocky Mountain montane conifer forest (12 percent); and (4) Great Basin conifer woodland (12 percent).

In addition, two studies (Menke and Hayes 2003, entire; Robinson *et al.* 2006, entire) attempted to evaluate potential jaguar habitat in New Mexico using methods similar to those described in Hatten *et al.* (2005, pp. 1025–1028). However, due to the small number of reliable and spatially accurate records within New Mexico, neither model was able to determine patterns of habitat use (and associated vegetation communities) for jaguars in New Mexico, instead relying on literature and expert opinion for elements to include in the models. These vegetation communities included Madrean evergreen woodland, which Menke and Hayes (2003, p. 13) considered the most similar to habitats used by the closest breeding populations of jaguars in Mexico, as well as grasslands (semidesert, Plains and Great Basin, and subalpine), interior chaparral, conifer forests and woodlands (Great Basin, Petran montane, and Petran subalpine), and desertscrub (Chihuahuan, Arizona upland Sonoran, and Great Basin).

Using the methodology described in Hatten *et al.* (2005, pp. 1025–1028), but with some modifications, Sanderson and Fisher (2011, pp. 1–11; and 2013, entire) created jaguar habitat models for the proposed Northwestern Recovery Unit. In the latest version of the model (version 13), Sanderson and Fisher (2013, p. 13) used a data set of 453 jaguar observations (note that Table 1.3 incorrectly states 452 instead of 453) for which the description of the location was sufficient to place it with certainty within 10 km (6.2 mi) of its actual location, and for which a date to the nearest century was available (Sanderson and Fisher 2013, pp. 3–5 and Appendix 2). Sanderson and Fisher (2013, p. 6) substituted a digital layer describing ecoregions (World Wildlife Fund Ecoregions) for the digital biotic community layer based on Brown and Lowe (1980, map) and Brown (1994, entire), however. The reason for this was because the latter two references do

not cover the entire Northwestern Recovery Unit for the jaguar; therefore, an appropriate substitution was required for modeling purposes. Within this ecoregion's digital layer, the category given the highest relative weight (0.2) within the United States is called Sierra Madre Occidental pine-oak forests, representing the best jaguar habitat within the borderlands region (Sanderson and Fisher 2013, p. 34). This category most closely resembles the Madrean evergreen woodland biotic community. There is no equivalent category for semidesert grassland in the ecoregions digital layer; instead, Sonoran desert and Chihuahuan desert cover all grassland and desert biotic communities. These two desert categories are given a very low relative weight (0.01), representing poorer quality jaguar habitat within the borderlands region (Sanderson and Fisher 2013, p. 34).

Sanderson and Fisher (2011, p. 7; 2013, pp. 5–6) also added a digital layer to capture canopy cover (called land cover in the reports), as represented by a digital layer called tree cover. In the latest version of the model (version 13), Sanderson and Fisher (2013, p. 20) analyzed the tree cover preferred by jaguars in the Jalisco Core Area (the southernmost part of the Northwestern Recovery Unit) separately from tree cover in all other areas (note that p. 15 of this report incorrectly states that the Sinaloa Secondary Area is included with the Jalisco Core Area in this analysis) to reflect the major habitat shift from the dry tropical forest of Jalisco, Mexico, to the thornscrub vegetation of Sonora, Mexico. The results of these analyses indicate that jaguars in the southernmost part of the Northwestern Recovery Unit (the Jalisco Core Area) seem to inhabit a wider range of tree cover values (greater than 1 to 100 percent), whereas jaguars throughout the rest of the Northwestern Recovery Unit (including the United States) appear to inhabit a narrower range of tree cover values (greater than 1 to 50 percent) (Sanderson and Fisher, p. 20).

Therefore, based on the information above, we identify Madrean evergreen woodlands and semidesert grasslands containing greater than 1 to 50 percent tree cover (or canopy cover) as an essential component of the physical or biological feature essential for the conservation of the jaguar in the United States. Though slightly different than the habitat characteristics included in the latest habitat model produced by the Jaguar Recovery Team, Madrean evergreen woodland and semidesert grassland as described by Brown and

Lowe (1980, map) and Brown (1994, entire, including appendices) are included instead of Sierra Madre Occidental pine-oak, Sonoran desert, and Chihuahuan desert vegetation communities described by the World Wildlife Fund Ecoregion data layer because of the higher resolution of these data and more accurate representation of the vegetation communities in the United States and borderlands region and their importance to jaguars within this area (as described above; see also Table 1 in the “Class I Reports” section, above). We directly incorporate the tree cover recommendation within the northern part of the Northwestern Recovery Unit (greater than 1 to 50 percent; Sanderson and Fisher 2013, p. 33) as part of this essential physical or biological feature component.

**Rugged Topography**—Rugged topography (including canyons, ridges, and some rocky hills to provide sites for resting) is acknowledged as an important component of jaguar habitat in the northwestern-most portion of its range (Jaguar Recovery Team 2012, pp. 15–16). The most recent Sanderson and Fisher (2013, p. 17) habitat model for the Northwestern Recovery Unit for the jaguar determined that jaguars in this area were most frequently found in intermediately, moderately, and highly rugged terrain. Additionally, one study in the U.S.-Mexico borderlands area (Boydston and López González 2005, entire) and one in northeastern Mexico (Ortega-Huerta and Medley 1999, entire) incorporate slope as a factor in describing jaguar habitat. Although slope can provide some understanding of topography (steep slopes generally indicate a more rugged landscape), it is less descriptive in terms of quantifying terrain heterogeneity (diversity) (Hatten *et al.* 2005, pp. 1026–1027).

Nonetheless, in these studies, jaguar distribution was found to be on steeper slopes than those slopes that were available for the study areas in general (Ortega-Huerta and Medley 1999, p. 261; Boydston and López González 2005, p. 54), indicating jaguars were found in more rugged areas in these studies.

Two modeling exercises incorporating ruggedness have been conducted to determine existing jaguar habitat in the southwestern United States, one in Arizona and another in New Mexico. To examine the relationship between jaguars and landscape roughness in Arizona, Hatten *et al.* (2005, p. 1026) calculated a terrain ruggedness index (TRI; Riley *et al.* 1999, as cited in Hatten *et al.* 2005, p. 1026) measuring the slope in all directions of each 1-km<sup>2</sup> (0.4-mi<sup>2</sup>) cell (pixel) in their model. They divided the TRI data into seven classes

according to relative roughness: level, nearly level, slightly rugged, intermediately rugged, moderately rugged, highly rugged, and extremely rugged. With respect to topography, they found that 92 percent of the 25 jaguar records used in their model (see “Water” in the “Food, Water, Air, Light, Minerals, or Other Nutritional or Physiological Requirements” section, above) occurred in intermediately rugged to extremely rugged terrain (the remaining 8 percent were in nearly level terrain).

Menke and Hayes (2003, entire) attempted to evaluate potential jaguar habitat in New Mexico using methods similar to those described in Hatten *et al.* (2005, pp. 1025–1028). While patterns of habitat use for jaguars could not be determined (due to the small number of reliable and spatially accurate records within New Mexico, of which there were seven), all sighting locations occurred in areas that were assigned a highly rugged value, and terrain ruggedness was the single variable that appeared to have a high degree of correlation with locations of jaguar observations in New Mexico.

In addition, through the most recent habitat modeling efforts for the jaguar in the Northwestern Recovery Unit, Sanderson and Fisher (2013, pp. 33–34) determined that intermediately, moderately, or highly rugged terrain represented the best habitat available for jaguars in the northwestern-most part of their range.

Therefore, based on this information, we identify areas of intermediately, moderately, or highly rugged terrain as an essential component of the physical or biological feature essential for the conservation of the jaguar in the United States.

**Elevation**—Elevation is a component of jaguar habitat in the northwestern-most portion of its range (Sanderson and Fisher 2013, pp. 5, 6, Appendix 2). Based on a visual analysis of the frequency of jaguar observations at different elevations within the northwestern-most portion of the species’ range, the technical subgroup of the Jaguar Recovery Team determined that areas above 2,000 m (6,562 ft) did not provide jaguar habitat, as only 3.3 percent (15 of 453) of the observations utilized in the most recent jaguar habitat modeling effort occurred above this elevation (Sanderson and Fisher 2013, pp. 19, 29; note that p. 19 incorrectly states 20 observations above 2,000 m (6,562 ft) instead of 15, and Table 1.3 on p. 13 incorrectly states 452 jaguar observations total instead of 453). In the most recent habitat model for the jaguar in the proposed Northwestern Recovery

Unit, Sanderson and Fisher (2013, pp. 19, 29) incorporated this upper-elevation limit and excluded areas above 2,000 m (6,562 ft). Therefore, based on this information, we identify areas of less than 2,000 m (6,562 ft) in elevation as an essential component of the physical or biological feature essential for the conservation of the jaguar in the United States.

#### Sites for Breeding, Reproduction, or Rearing (or Development) of Offspring

As demonstrated in Table 1, above, from 1962 to the present all undisputed Class I jaguar observations for which the sex of the animal could be determined have been male individuals. Few records of females exist within the United States (see Brown and López González 2001, pp. 6–9 for records from 1900–2000), and even fewer records of jaguar breeding events in the United States have been documented. The most recent known breeding event is from over 100 years ago in 1910 of a female jaguar with one cub at the head of Cheylon Canyon in the Sitgreaves National Forest in Arizona (Brown and López González 2001, p. 9). Further, as described in the *Jaguar Recovery Planning in Relation to Critical Habitat* section, above, the recovery function and value of critical habitat within the United States is to contribute to the species’ persistence and, therefore, overall conservation by providing areas to support some individuals during dispersal movements, by providing small patches of habitat (perhaps in some cases with a few resident jaguars), and as areas for cyclic expansion and contraction of the nearest core area and breeding population in the Northwestern Recovery Unit (Jaguar Recovery Team 2012, pp. 40, 42). Since the last known breeding event in the United States was in 1910, the breeding habitat for jaguars in the United States is not clearly understood. Further, while some assessment of breeding habitat has been conducted in Mexico, this habitat is different than the habitat in the United States. Therefore we are not able to identify any additional habitat features needed for purposes of reproduction, beyond those habitat features already identified.

#### Habitats That Are Protected From Disturbance or Are Representative of the Historical, Geographical, and Ecological Distributions of a Species

Human populations can impact jaguars directly by killing individuals through hunting, poaching, or depredation control, as well as indirectly through disturbance of normal biological activities, loss of

habitat, and habitat fragmentation. Rangewide, illegal killing of jaguars is one of the two most significant threats to the jaguar (Nowell and Jackson 1996, p. 121; Núñez *et al.* 2002, p. 100; Taber *et al.* 2002, p. 630; Chávez and Ceballos 2006, p. 10), and, according to the July 22, 1997, clarifying rule (62 FR 39147), the primary threat to jaguars in the United States was illegal shooting (see listing rule for a detailed discussion). This, however, is no longer accurate, as the most recent known shooting of a jaguar in Arizona was in 1986 (Brown and López González 2001, p. 7). Jaguars are protected by Federal law through the Act and by State law in Arizona and New Mexico. Four of the individual jaguars most recently documented (since 1996) in Arizona and New Mexico have been documented by lion hunters, who took photographs of the jaguars and then reported them to the Arizona Game and Fish Department and the Service. While illegal killing of jaguars continues to be a major threat to jaguars south of the U.S.-Mexico international border, it does not appear to be a significant threat within the United States.

In terms of human influence and impact on jaguars other than by direct killing, human populations have both direct and indirect impacts on jaguar survival and mortality. For example, an increase in road density and human settlements tends to fragment habitat and isolate populations of jaguars and other wildlife. For carnivores in general, the impacts of high road density have been well documented and thoroughly reviewed (Noss *et al.* 1996 and Carroll *et al.* 2001, as cited by Menke and Hayes 2003, p. 12). Roads may have direct impacts to carnivores and carnivore habitats, including roadkill, disturbance, habitat fragmentation, changes in prey numbers or distribution, and increased access for legal or illegal harvest (Menke and Hayes 2003, p. 12; Colchero *et al.* 2010, entire). Studies have also shown that jaguars selectively use large areas of relatively intact habitat away from certain forms of human influence. Zarza *et al.* (2007, pp. 107, 108) report that towns and roads had an impact on the spatial distribution of jaguars in the Yucatan peninsula, where jaguars used areas located more than 6.5 km (4 mi) from human settlements and 4.5 km (2.8 mi) from roads. In the State of Mexico, Mexico, Monroy-Vilchis *et al.* (2008, p. 535) report that one male jaguar occurred with greater frequency in areas relatively distant from roads and human populations. In some areas of western Mexico, however, jaguars (both sexes)

have frequently been recorded near human settlements and roads (Núñez 2011, pers. comm.). In Marismas Nacionales, Nayarit, a jaguar den was recently located very close to an agricultural field, apparently 1 km (0.6 mi) from a small town (Núñez 2011, pers. comm.). Jaguar presence is affected in different ways by various human activities; however, direct persecution likely has the most significant impact.

Because jaguars are secretive animals and generally tend to avoid highly disturbed areas (Quigley and Crawshaw 1992, entire; Hatten *et al.* 2005, p. 1025), human density was a factor considered in jaguar habitat modeling exercises for Arizona (Hatten *et al.* 2005, p. 1025) and New Mexico (Menke and Hayes 2003, pp. 9–13; Robinson *et al.* 2006, pp. 10, 15, 18–20), and the habitat models developed by Sanderson and Fisher (2011, pp. 5–11 and 2013, entire) for the northwestern Mexico and the U.S.-Mexico borderlands area. Hatten *et al.* (2005, p. 1025) excluded areas within city boundaries, higher density rural areas visible on satellite imagery, and agricultural areas from their Arizona habitat model, as recommended by jaguar experts. All of the jaguar locations used in their model fell outside of these areas, indicating jaguars are not found in highly developed or disturbed areas (Figure 6, p. 1031).

Menke and Hayes (2003, pp. 9–13) attempted to evaluate potential jaguar habitat in New Mexico using methods similar to those described in Hatten *et al.* (2005, p. 1025). Because of a lack of comparable digital data for New Mexico, they instead created a data layer of road density per km<sup>2</sup> and classified it into habitat suitability categories. However, due to the small number of reliable and spatially accurate jaguar occurrence records within New Mexico (a total of seven), patterns of habitat use for jaguars could not be determined from their model, and they did not summarize the road density categories in which jaguars were found within the State. In the habitat model for New Mexico developed by Robinson *et al.* (2006), areas with continuous row crop agriculture, human residential development in excess of 1 house per 4 ha (10 ac), or industrial areas were not considered jaguar habitat, and were therefore excluded from their model. Similarly to Menke and Hayes (2003, entire), patterns of habitat use for jaguars could not be determined from their model, and they did not summarize the human footprint categories in which jaguars were found within the State.

The habitat models developed by Sanderson and Fisher (2011, pp. 5–11

and 2013, pp. 33–42) include a Human Influence Index (HII) criterion developed by the Wildlife Conservation Society (WCS) and Center for International Earth Science Information Network (CIESIN) at the Socioeconomic Data and Applications Center (SEDAC) at Columbia University (SEDAC 2012, p. 1). Using procedures developed by Sanderson (2002, as described in SEDAC 2012, pp. 1–2), WCS and CIESIN combined scores for eight input layers (human population density per km<sup>2</sup>, railroads, major roads, navigable rivers, coastlines, stable nighttime lighting, urban polygons, and land cover) to calculate a composite HII for 1-km<sup>2</sup> (0.4-mi<sup>2</sup>) grid cells (pixels) worldwide. These values could range from 0 to 64, with 0 representing no human influence and 64 representing the maximum human influence possible using all 8 measures of human presence.

In the most recent version of the habitat model (version 13), Sanderson and Fisher (2013, pp. 20, 34) analyzed the HII preferred by jaguars in the Jalisco Core Area (the southernmost part of the Northwestern Recovery Unit) separately from the HII in all other areas (note that p. 15 of this report incorrectly states that the Sinaloa Secondary Area is included with the Jalisco Core Area in this analysis) to recognize that jaguars may respond more tolerantly to human influence in the south than they do in the north. The results of these analyses indicate that jaguars in the southernmost part of the Northwestern Recovery Unit (the Jalisco Core Area) seem to inhabit a wider range of HII values (less than 30), whereas jaguars throughout the rest of the Northwestern Recovery Unit (including the United States) appear to inhabit a narrower range of HII values (less than 20) (Sanderson and Fisher 2013, pp. 20, 34).

Therefore, based on this information, we identify areas in which the HII calculated over 1 km<sup>2</sup> (0.4 mi<sup>2</sup>) is less than 20 as an essential component of the physical or biological feature essential for the conservation of the jaguar in the United States. These areas are characterized by minimal to no human population density, no major roads, or no stable nighttime lighting over any 1-km<sup>2</sup> (0.4-mi<sup>2</sup>) area.

#### *Primary Constituent Elements for Jaguar*

Under the Act and its implementing regulations, we are required to identify the physical or biological features essential to the conservation of jaguar 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.

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 jaguars are:

Expansive open spaces in the southwestern United States of at least 100 km<sup>2</sup> (38.6 mi<sup>2</sup>) in size which:

- (1) Provide connectivity to Mexico;
- (2) Contain adequate levels of native prey species, including deer and javelina, as well as medium-sized prey such as coatis, skunks, raccoons, or jackrabbits;
- (3) Include surface water sources available within 20 km (12.4 mi) of each other;
- (4) Contain from greater than 1 to 50 percent canopy cover within Madrean evergreen woodland, generally recognized by a mixture of oak (*Quercus* spp.), juniper (*Juniperus* spp.), and pine (*Pinus* spp.) trees on the landscape, or semidesert grassland vegetation communities, usually characterized by *Pleuraphis mutica* (tobosagrass) or *Bouteloua eriopoda* (black grama) along with other grasses;
- (5) Are characterized by intermediately, moderately, or highly rugged terrain;
- (6) Are below 2,000 m (6,562 feet) in elevation; and
- (7) Are characterized by minimal to no human population density, no major roads, or no stable nighttime lighting over any 1-km<sup>2</sup> (0.4-mi<sup>2</sup>) area.

Because habitat in the United States is at the edge of the species' northern range, and is marginal compared to known habitat throughout the range, we have determined that all of the primary constituent elements discussed must be present in each specific area to constitute critical jaguar habitat in the United States, including connectivity to Mexico (but that connectivity may be provided either through a direct connection to the border or by other areas essential for the conservation of the species; see *Areas Essential for the Conservation of Jaguars*, below).

#### *Special Management Considerations or Protections*

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.

Jaguar habitat and the features essential to their conservation are threatened by the direct and indirect effects of increasing human influence into remote, rugged areas, as well as projects and activities that sever connectivity to Mexico. These may include, but are not limited to: Significant increases in border-related activities, both legal and illegal; construction of roadways, power lines, or pipelines; construction or expansion of human developments; mineral extraction and mining operations; military activities in remote locations; and human disturbance related to increased activities in or access to remote areas.

Jaguars in the United States are understood to be individuals dispersing north from Mexico (perhaps in some cases becoming resident in the United States), where the closest breeding population occurs about 210 km (130 mi) south of the U.S.-Mexico border in Sonora near the towns of Huasabas, Sahuaripa (Brown and López González 2001, pp. 108–109), and Nacori Chico (Rosas-Rosas and Bender 2012, pp. 88–89). Therefore, impeding jaguar movement from Mexico to the United States would adversely affect the Northwestern Recovery Unit's ability to cyclically expand and contract as jaguar populations in that unit recover.

Continuing threats from construction of border infrastructure (such as pedestrian fences and roads), as well as illegal activities and resultant law enforcement response (such as increased human presence, vehicles, and lighting), may limit movement of jaguars at the U.S.-Mexico border (Service 2007, pp. 23–27; 2008, pp. 73–75). The border from the Tohono O'odham Nation, Arizona, to southwestern New Mexico has a mix of pedestrian fence (not permeable to jaguars), vehicle fence (fence designed to prevent vehicle but not pedestrian entry; it is generally permeable enough to allow for the passage of jaguars), legacy (older) pedestrian and vehicle fence, and unfenced segments (primarily in rugged, mountainous areas). Fences designed to prevent the passage of humans across the border also prevent passage of jaguars. However, there is little to no impermeable fence in areas designated as critical habitat, and we do not anticipate the construction of impermeable fence in such areas. Additionally, fences may cause an increase in illegal traffic and subsequent law enforcement activities in areas where no fence exists (such as rugged, mountainous areas). This activity may limit jaguar movement across the border

and result in general disturbance to jaguars and degradation of their habitat.

While current levels of law enforcement activity do not pose a significant threat, a substantial increase in activity levels could be of concern. We note that some level of law enforcement activity can be beneficial, as it decreases illegal traffic. Significant increases in illegal crossborder activities in the designated critical habitat areas could pose a threat to the jaguar, and, therefore, border security actions provide a beneficial decrease in crossborder violations and their impacts. In summary, special management considerations or protection of the physical or biological feature essential to the conservation of jaguar habitat may be needed to alleviate the effects of border-related activities, allowing for some level of permeability so that jaguars may pass through the U.S.-Mexico border.

Under section 102 of the Illegal Immigration Reform and Immigrant Responsibility Act, the Secretary of the Department of Homeland Security (DHS) is authorized to waive laws where the Secretary of DHS deems it necessary to ensure the expeditious construction of border infrastructure in areas of high illegal entry. As noted above, we know of no plans to construct additional security fences in the designated critical habitat. However, if future national security issues require additional measures and the Secretary of DHS invokes the waiver, review through the section 7 consultation process would not be conducted. If DHS chooses to consult with the Service on activities covered by a waiver, special management considerations would continue to occur on a voluntary basis.

Construction of roadways, power lines, or pipelines (all of which usually include maintenance roads), construction or expansion of human developments, mineral extraction and mining operations, and military operations on the ground can have the effect of altering habitat characteristics and increasing human presence in otherwise remote locations. Activities that can permanently alter vegetation characteristics, displace native wildlife, affect sources of water, and/or alter terrain ruggedness, such as construction and mining, may render an area unsuitable for jaguars. In addition, these activities, as well as military operations on the ground in remote areas, bring an increase in human disturbance into jaguar habitat, potentially fragmenting it further. As described in the "Habitats Protected from Disturbance or Representative of the Historical, Geographic, and Ecological

Distributions of the Species" section, above, studies have also shown that jaguars selectively use large areas of relatively intact habitat away from human influence (Zarza *et al.* 2007, pp. 107, 108). Modeling exercises both in the United States (Menke and Hayes 2003, entire; Hatten *et al.* 2005, entire; Robinson *et al.* 2006, entire) and in northwestern Mexico and the U.S.-Mexico borderlands area (Sanderson and Fisher 2011, pp. 1–11 and 2013, entire) incorporate low levels of human influence when mapping potential jaguar habitat in the United States. Special management considerations of the physical and biological feature essential to the conservation of the jaguar may be needed to alleviate the effects on jaguar habitat of new road construction or construction or expansion of power line and pipeline projects; human developments; mining operations; and ground-based military activities. Future projects should avoid (to the maximum extent possible) areas identified as meeting the definition of critical habitat for jaguars, and if unavoidable, should be constructed or carried out to minimize habitat effects.

#### *Areas Essential for the Conservation of Jaguars*

As described in the "Occupied Area at the Time of Listing" section, above, we acknowledge that the lack of jaguar sightings at the time the species was listed as endangered in 1972 (37 FR 6476), as well as some expert opinions cited in our July 22, 1997, clarifying rule (62 FR 39147) (for example, Swank and Teer 1989), suggest that jaguars in the United States had declined to such an extent by that point as to be effectively eliminated. Only two undisputed Class I records (Table 1 in the "Class I Records," above) exist for jaguars between 1962 and 1982, both of which were males killed by hunters. To the extent that areas described above may not have been occupied at the time of listing, we determine that they are essential to the conservation of the species for the following reasons: (1) They have demonstrated recent (since 1996) occupancy by jaguars; (2) they contain features that comprise suitable jaguar habitat; and (3) they contribute to the species' persistence in the United States by allowing the normal demographic function and possible range expansion of the proposed Northwestern Recovery Unit, which is essential to the conservation of the species (as discussed in the *Jaguar Recovery Planning in Relation to Critical Habitat* section, above). Therefore, we include them in the critical habitat designation.

Additionally, as discussed in the *Jaguar Recovery Planning in Relation to Critical Habitat* and “Space for Individual and Population Growth and for Normal Behavior” sections, above, connectivity to Mexico is essential for the conservation of jaguars. Jaguars in the United States are understood to be individuals dispersing from the nearest core population in Mexico, which includes areas in central Sonora, southwestern Chihuahua, and northeastern Sinaloa (Jaguar Recovery Team 2012, p. 21). The closest known breeding population occurs about 210 km (130 mi) south of the U.S.-Mexico border in Sonora near the towns of Huasabas, Sahuaripa (Brown and López González 2001, pp. 108–109), and Nacori Chico (Rosas-Rosas and Bender 2012, pp. 88–89). In several of our **Federal Register** documents pertaining to the jaguar, including the notice in which we determined that designating critical habitat was prudent (75 FR 1741, p. 1743), we discussed the need to develop and maintain travel corridors for jaguars between the United States and Mexico to enable a few, possibly resident individuals to persist north of the international border. Therefore, we conclude that maintaining travel corridors to Mexico is essential for the conservation of jaguars in the Northwestern Recovery Unit, and, therefore, for the species as a whole.

As we discussed under “Space for Individual and Population Growth and for Normal Behavior,” above, describing these areas of connectivity within the United States is difficult because of a lack of information about the features these areas encompass. However, in some areas there may be a level of connectivity to Mexico that could be provided because these areas contain some, but not all, of the PCEs described above. In the 2011 jaguar habitat model developed for northwestern Mexico and the U.S.-Mexico borderlands area, Sanderson and Fisher (2011, p. 11) described how low human influence is perhaps the most important feature defining jaguar habitat, as jaguars most often avoid areas with too much human pressure. Furthermore, their model described a level of uncertainty regarding jaguar use of areas with moderate tree cover and intermediate to high ruggedness, as jaguars could potentially be found in areas meeting only one of these habitat qualities. Therefore, we have determined the most likely areas providing connectivity from occupied areas in the United States to Mexico are those in which the human influence is low, and either or both

moderate tree cover or intermediately to highly rugged terrain is present.

Consequently, we are further defining areas essential for the conservation of jaguars as those areas without a Class I observation that: (1) Connect an area that may have been occupied that is isolated within the United States to Mexico, either through a direct connection to the international border or through another area that may have been occupied; and (2) contain low human influence and impact, and either vegetative cover or rugged terrain. Based on these criteria, we identified three subunits outside of areas that may have been occupied that are also essential for the conservation of jaguars in the United States because they provide connectivity to Mexico. They include the southern extent of the Baboquivari Mountains, an east-west connection area between the Santa Rita and Empire Mountains and northwestern extent of the Whetstone Mountains, and a north-south connection area between the southern extent of the Whetstone Mountains and the Huachuca Mountains (including the Mustang Mountains).

#### Climate Change

The degree to which climate change will affect jaguar habitat in the United States is uncertain, but it has the potential to adversely affect the jaguar within the next 50 to 100 years (Jaguar Recovery Team 2012, p. 32). Climate change will be a particular challenge for biodiversity because the interaction of additional stressors associated with climate change and current stressors may push species beyond their ability to survive (Lovejoy 2005, pp. 325–326). The synergistic implications of climate change and habitat fragmentation are the most threatening facet of climate change for biodiversity (Hannah and Lovejoy 2005, p. 4). Current climate change predictions for terrestrial areas in the Northern Hemisphere indicate warmer air temperatures, more intense precipitation events, and increased summer continental drying (Field *et al.* 1999, pp. 1–3; Hayhoe *et al.* 2004, p. 12422; Cayan *et al.* 2005, p. 6; Intergovernmental Panel on Climate Change (IPCC) 2007, p. 1181). Climate change may lead to increased frequency and duration of severe storms and droughts (Golladay *et al.* 2004, p. 504; McLaughlin *et al.* 2002, p. 6074; Cook *et al.* 2004, p. 1015).

The current prognosis for climate change impacts in the American Southwest includes fewer frost days; warmer temperatures; greater water demand by plants, animals, and people; and an increased frequency of extreme

weather events, such as heat waves, droughts, and floods (Weiss and Overpeck 2005, p. 2074; Archer and Predick 2008, p. 24). How climate change will affect summer precipitation is less certain, because precipitation predictions are based on continental-scale general circulation models that do not yet account for land use and land cover effects or regional phenomena, such as those that control monsoonal rainfall in the Southwest (Weiss and Overpeck 2005, p. 2075; Archer and Predick 2008, pp. 23–24). Some models predict dramatic changes in Southwestern vegetation communities as a result of climate change (Weiss and Overpeck 2005, p. 2074; Archer and Predick 2008, p. 24), especially as wildfires carried by nonnative plants (e.g., buffelgrass) potentially become more frequent, promoting the presence of exotic species over native ones (Weiss and Overpeck 2005, p. 2075).

The impact of future drought, which may be long-term and severe (Seager *et al.* 2007, pp. 1183–1184; Archer and Predick 2008, entire), may affect jaguar habitat in the U.S.-Mexico borderlands area, but the information currently available on the effects of global climate change and increasing temperatures does not make sufficiently precise estimates of the location and magnitude of the effects. We do not know whether the changes that have already occurred have affected jaguar populations or distribution, nor can we predict how the species will adapt to or be affected by the type and degree of climate changes forecast. We are not currently aware of any climate change information specific to the habitat of the jaguar that would indicate what areas may become important to the species in the future. Therefore, we are unable to determine what additional areas, if any, may be appropriate to include in the final critical habitat designation for this species specifically to address the effects of climate change.

#### Criteria Used To Identify Critical Habitat

As required by section 4(b)(2) of the Act, we use the best scientific data available to designate critical habitat. We reviewed available information and supporting data that pertains to the habitat requirements of the jaguar. Much of this information is compiled in the Recovery Outline for the Jaguar (Jaguar Recovery Team 2012, entire), Digital Mapping in Support of Recovery Planning for the Northern Jaguar report (Sanderson and Fisher 2011, pp. 1–11), and Jaguar Habitat Modeling and Database Update report (Sanderson and Fisher 2013, entire), which we regard as

the best available information for the jaguar and its habitat needs in the northern portion of its range. A complete list of information sources is available in our Literature Cited located on <http://www.regulations.gov> at Docket No. FWS-R2-ES-2012-0042 and at the field office responsible for the designation (see **FOR FURTHER INFORMATION CONTACT** above).

In accordance with the Act and our implementing regulations at 50 CFR 424.12(b), we review available information pertaining to the habitat requirements of the species and identify occupied areas at the time of listing that contain the features essential to the conservation of the species. If, after identifying occupied areas, a determination is made that those areas are inadequate to ensure conservation of the species, in accordance with the Act and our implementing regulations at 50 CFR 424.12(e), we then consider whether designating additional areas—outside those currently occupied—are essential for the conservation of the species. We are designating critical habitat in areas within the geographical area occupied by the species at the time of listing in 1972. While we understand there may be alternative explanations as to whether or not areas were occupied at the time the jaguar was listed, we are required to make an administrative decision regarding occupancy status for purposes of delineating critical habitat units and applying the policy as described in the Act. Based on our analyses as discussed under the *Areas Essential for the Conservation of Jaguars*, above, it is our determination that the lands described were occupied at the time of listing, and thus are described in the unit descriptions, below, as being occupied. However, these same areas are also considered essential, based on our analysis, above. We also are designating specific areas without a Class I observation outside the geographical area that may have been occupied by the species at the time of listing. These subunits provide connectivity between subunits that may have been occupied and Mexico because we have determined that such areas are essential for the conservation of the species.

As discussed above, we are defining the areas that may be occupied by jaguars to include rugged mountain ranges in southeastern Arizona and extreme southwestern New Mexico: (1) In which an undisputed Class I record has been documented (see Table 1 in the “Class I Records” section, above) between 1962 and the present (September 11, 2013), and (2) that currently contain the physical or

biological feature described above (see below for the steps we followed to delineate critical habitat boundaries). Therefore, occupied areas may include the Baboquivari, Quinlan, Coyote, Pajarito, Atascosa, Tumacacori, Patagonia, Canelo Hills, Huachuca, Grosvenor Hills, Santa Rita, Empire, Whetstone, and Peloncillo Mountains of Arizona, and the Peloncillo and San Luis Mountains of New Mexico.

All undisputed Class I records of jaguars documented in the United States since 1962 have been within the aforementioned mountain ranges, with the following two exceptions. We are not including the Dos Cabezas Mountains in Arizona (one male jaguar killed in 1986) as critical habitat because, while this mountain range contains some of the primary constituent elements of the physical or biological feature required for critical habitat, by itself it is not of an adequate size (100 km<sup>2</sup> (38.6 mi<sup>2</sup>)) to meet the expansive open spaces requirement. Additionally, the 1971 record of a male jaguar killed by hunters was along the Santa Cruz River, not within a mountain range. As described above under “Space for Individual and Population Growth and for Normal Behavior,” this is the only record found in a valley bottom since the species was listed, and likely represents a jaguar moving between areas of higher quality habitat found in the surrounding isolated mountain ranges. Therefore, because we are unable to describe or delineate the features of areas connecting mountain ranges in the United States due to a lack of information, this record does not fall within or near the physical or biological feature described above.

We are also designating specific areas without a Class I observation outside the geographical area that may have been occupied by the species at the time of listing. These areas provide connectivity to Mexico, or to another area that may have been occupied that provides connectivity to Mexico (see *Areas Essential for the Conservation of Jaguars*, above), because such areas are essential for the conservation of the species.

We delineated (mapped) critical habitat boundaries using the following steps:

(1) We mapped areas containing PCEs 3, 4, 5, and 7 as determined from GIS data on water availability, vegetation community, tree cover, ruggedness, and human influence (for a list of data sources, see our response to comment 63 in the **Summary of Comments and Recommendations** section). We did not use data describing distribution of native prey to map areas because

comprehensive, consistent data regarding prey distribution across Arizona and New Mexico is lacking. Therefore, we relied on the best information that is readily available from the Arizona Game and Fish Department (Hunt Arizona 2012 Edition, available at: <http://www.azgfd.gov/regs/HuntArizona2012.pdf>) and the New Mexico Department of Game and Fish (Harvest Information, available at: <http://www.wildlife.state.nm.us/recreation/hunting/>).

Using this information, we determined that white-tailed deer and javelina (the preferred prey of the jaguar in the northwesternmost part of its range) have been present in each critical habitat unit (described in Final Critical Habitat Designation, below) in Arizona for at least 50 years, and have been successfully hunted in each hunt unit overlapping jaguar critical habitat for the same period of time (Game Management Units 30A, 34A, 34B, 35A, 35B, 36A, 36B, and 36C). Historical harvest information from New Mexico is not as readily available; however, based on the most recent harvest information, white-tailed deer and javelina are available in Unit 5 of jaguar critical habitat (Game Management Unit 27), and are likely available in Unit 6 (both described in Final Critical Habitat Designation, below) of jaguar critical habitat (Game Management Unit 26; we can determine that javelina have been successfully harvested in this Game Management Unit, but this particular unit lumps all deer together, so we are unable to distinguish hunt success between mule deer and white-tailed deer). Therefore, while we were unable to map prey distribution within Arizona and New Mexico, we believe adequate levels of prey are available, and have been available for at least 50 years in Arizona.

Areas (also called polygons) that were adjacent to each other (for example, touching at corners) were merged into one polygon. We then selected polygons containing at least one undisputed Class I record of a jaguar from 1962 through September 11, 2013 (Table 1 in the “Class I Records” section, above). We also selected polygons that fell partially or entirely within 1 km (0.4 mi) of these polygons because most of the GIS datasets we used were of a 1-km<sup>2</sup> (0.4-mi<sup>2</sup>) resolution (pixel size), and, therefore, we determined that this was the distance within which some mapping error may have occurred. If the area within the selected polygons did not meet the minimum size criterion of 100 km<sup>2</sup> (38.6 mi<sup>2</sup>) when added

together, we removed those polygons from further consideration.

We placed a 1-km (0.4-mi) buffer around the remaining polygons to account for mapping error, but did not apply this buffer to areas in which the vegetation community was other than Madrean evergreen woodland or semidesert grassland, or areas in which the HII was 20 or more (see “Habitats Protected from Disturbance or Representative of the Historical, Geographic, and Ecological Distributions of the Species,” above). The vegetation community data we used were not mapped at a 1-km<sup>2</sup> (0.4-mi<sup>2</sup>) resolution, and, therefore, we determined the 1-km (0.4-mi) buffer did not apply to this dataset. Our rationale for ensuring only areas in which the HII was less than 20 (as described in the “Habitats Protected from Disturbance or Representative of the Historical, Geographic, and Ecological Distributions of the Species” section, above) were included in the designation was based on Sanderson and Fisher (2011, p. 11), in which they described low human influence as being essential to the jaguar; we, therefore, did not include any areas in which this PCE was absent because of its importance in describing jaguar habitat. We also removed areas above 2,000 m (6,562 ft) (PCE 6). Small areas of 1 km<sup>2</sup> (0.4 mi<sup>2</sup>) or less (our tolerance buffer as described above) that were excluded within the polygons were then included, as these areas were of a size in which a mapping error could have occurred. For the same reason, we also removed small areas of 1 km<sup>2</sup> (0.4 mi<sup>2</sup>) or less (our tolerance buffer as described above) around the edges of the polygons if, due to the steps described above, they were disconnected or connected only by corners.

(2) If a polygon described in step 1, above, was not connected to Mexico, we selected and added areas containing low human influence and impact and either or both vegetative cover or rugged terrain to connect these areas directly to Mexico or to another occupied area connected directly to Mexico.

Therefore, we are designating six units based on sufficient elements of the essential physical or biological feature being present to support jaguar life-history processes. The occupied mountain ranges within the units contain all of the identified elements of the physical or biological feature necessary for jaguars. The unoccupied areas denoted as Subunits 1b, 4b, and 4c are essential for the conservation of the species, as they provide the jaguar connectivity with Mexico within the Northwestern Recovery Unit.

When determining critical habitat boundaries within this final rule, we made every effort to avoid including developed areas such as lands covered by buildings, pavement, and other structures because such lands lack the physical or biological feature necessary for jaguars. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Any such lands inadvertently left inside critical habitat boundaries shown on the maps of this final rule have been excluded by text in the rule and are not designated as critical habitat. Therefore, a Federal action involving these lands will not trigger section 7 consultation with respect to critical habitat and the requirement of no adverse modification unless the specific action would affect the physical or biological feature in the adjacent critical habitat.

Based on our analyses of areas as both occupied and unoccupied (but essential for the conservation of the species), we are designating critical habitat lands that we have determined may have been occupied at the time of listing and contain sufficient elements of the physical or biological feature to support life-history processes essential for the conservation of the species and lands outside of the geographical area that may have been occupied at the time of listing that we have determined are also essential. In our analysis we also evaluated the areas we consider occupied at the time of listing and determined that these same areas are

also essential for the conservation of jaguars in the Northwestern Recovery Unit and, therefore, for the species as a whole (see *Areas Essential for the Conservation of Jaguars*, above).

The critical habitat designation is defined by the map or maps, as modified by any accompanying regulatory text, presented at the end of this document in the rule portion. We include more detailed information on the boundaries of the critical habitat designation in the preamble of this document. We will make the coordinates or plot points or both on which each map is based available to the public on <http://www.regulations.gov> at Docket No. FWS-R2-ES-2012-0042, and at the field office responsible for the designation (see **FOR FURTHER INFORMATION CONTACT** above).

#### Final Critical Habitat Designation

We are designating 6 units as critical habitat for the jaguar. The critical habitat areas described below constitute our best assessment at this time of areas that meet the definition of critical habitat. Those 6 units are: (1) Baboquivari Unit divided into subunits (1a) Baboquivari-Coyote Subunit, including the Northern Baboquivari, Saucito, Quinlan, and Coyote Mountains, and (1b) the Southern Baboquivari Subunit; (2) Atascosa Unit, including the Pajarito, Atascosa, and Tumacacori Mountains; (3) Patagonia Unit, including the Patagonia, Santa Rita, Empire, and Huachuca Mountains, and the Canelo and Grosvenor Hills; (4) Whetstone Unit, divided into subunits (4a) Whetstone Subunit, (4b) Whetstone-Santa Rita Subunit, and (4c) Whetstone-Huachuca Subunit; (5) Peloncillo Unit, including the Peloncillo Mountains both in Arizona and New Mexico; and (6) San Luis Unit, including the northern extent of the San Luis Mountains at the New Mexico-Mexico border. Table 2 lists both the unoccupied units and those that may have been occupied at the time of listing.

TABLE 2—OCCUPANCY OF JAGUAR BY DESIGNATED CRITICAL HABITAT UNITS

Unit	Occupied at time of listing
1—Baboquivari Unit:	
1a—Baboquivari-Coyote Subunit:	
Coyote Mountains	Yes.
Quinlan Mountains	Yes.
Saucito Mountains	Yes.
Northern Baboquivari Mountains	Yes.
1b—Southern Baboquivari Subunit:	
Southern Baboquivari Mountains Connection	No.
2—Atascosa Unit:	

TABLE 2—OCCUPANCY OF JAGUAR BY DESIGNATED CRITICAL HABITAT UNITS—Continued

Unit	Occupied at time of listing
Tumacacori Mountains	Yes.
Atascosa Mountains	Yes.
Pajarito Mountains	Yes.
3—Patagonia Unit:	
Empire Mountains	Yes.
Santa Rita Mountains	Yes.
Grosvenor Hills	Yes.
Patagonia Mountains	Yes.
Canelo Hills	Yes.
Huachuca Mountains	Yes.
4—Whetstone Unit:	
4a—Whetstone Subunit:	
Whetstone Mountains	Yes.
4b—Whetstone-Santa Rita Subunit:	
Whetstone-Santa Rita Mountains Connection	No.
4c—Whetstone-Huachuca Subunit:	
Whetstone-Huachuca Mountains Connection	No.
5—Peloncillo Unit:	
Peloncillo Mountains (Arizona and New Mexico)	Yes.
6—San Luis Unit:	
San Luis Mountains (New Mexico)	Yes.

The approximate area of each critical habitat unit is shown in Table 3.

TABLE 3—DESIGNATED CRITICAL HABITAT UNITS FOR JAGUAR

Unit or subunit	Federal		State		Tribal		Private		Total	
	Ha	Ac	Ha	Ac	Ha	Ac	Ha	Ac	Ha	Ac
1a—Baboquivari-Coyote Subunit	4,396	10,862	9,239	22,831	0	0	3,290	8,130	16,925	41,823
1b—Southern Baboquivari Subunit	624	1,543	6,157	15,213	0	0	1,843	4,555	8,624	21,312
2—Atascosa Unit	53,807	132,961	2,296	5,672	0	0	2,522	6,231	58,625	144,865
3—Patagonia Unit	101,354	250,452	11,847	29,274	0	0	29,046	71,775	142,248	351,501
4a—Whetstone Subunit	16,066	39,699	5,445	13,455	0	0	3,774	9,325	25,284	62,479
4b—Whetstone-Santa Rita Subunit	532	1,313	4,612	11,396	0	0	0	0	5,143	12,710
4c—Whetstone-Huachuca Subunit	1,350	3,336	2,981	7,366	0	0	3,391	8,379	7,722	19,081
5—Peloncillo Unit	28,393	70,160	7,861	19,426	0	0	5,317	13,138	41,571	102,724
6—San Luis Unit	0	0	0	0	0	0	3,122	7,714	3,122	7,714
Grand Total	206,522	510,326	50,437	124,633	0	0	52,304	129,247	309,263	764,207

**Note:** Area sizes may not sum due to rounding.

We present brief descriptions of all units, and reasons why they meet the definition of critical habitat for jaguar, below.

#### *Unit 1: Baboquivari Unit*

**Subunit 1a—Baboquivari-Coyote Subunit:** Subunit 1a consists of 16,925 ha (41,823 ac) in the northern Baboquivari, Saucito, Quinlan, and Coyote Mountains in Pima County, Arizona. The main, larger section of this subunit is generally bounded by the eastern boundary of the Tohono O'odham Nation to the west and north, the western side of the Altar Valley to the east, and up to and including Leyvas Canyon and Three Peaks to the south.

There are four small areas of land that are disconnected from the main section of this subunit. One is a privately owned area within the boundaries of the Tohono O'odham Nation approximately 4 km (2.5 mi) west of the main, largest section and approximately 22.7 km (14.1 mi) south of State Highway 86. The second largest area is almost directly north of the main, largest section and is primarily Federally and State owned, with a small amount of private land included within the boundary. Between this area and the main, largest section is a small piece of State land included within the boundary. The last area is north and slightly west of the main section, and is

a privately owned area within the boundaries of the Tohono O'odham Nation. Land ownership within the entire unit includes approximately 4,396 ha (10,862 ac) of Federal lands; 9,239 ha (22,831 ac) of Arizona State lands; and 3,290 ha (8,130 ac) of private lands. The Federal land is administered by the Service and Bureau of Land Management. We consider the Baboquivari-Coyote Subunit occupied at the time of listing (37 FR 6476; March 30, 1972) (see "Occupied Area at the Time of Listing" section, above), and it may be currently occupied, based on jaguar photos from 1996 and from 2001–2008 (see Table 1 in the "Class I Records" section, above). It contains all

elements of the physical or biological feature essential to the conservation of the jaguar, except for connectivity to Mexico.

The primary land uses within Subunit 1a include ranching, grazing, border-related activities, Federal land management activities, and recreational activities throughout the year, including, but not limited to, hiking, birding, horseback riding, and hunting. Activities that may require special management may include, for example, habitat clearing, the construction of facilities, expansion of linear projects that may fragment jaguar habitat, some fuels-management activities, and some prescribed fire.

**Subunit 1b—Southern Baboquivari Subunit:** Subunit 1b consists of 8,624 ha (21,312 ac) in the southern Baboquivari Mountains in Pima County, Arizona. This subunit is generally bounded by the eastern boundary of the Tohono O'odham Nation to the west, up to but not including Leyvas and Bear Canyons to the north, the western side of the Altar Valley to the east, and the U.S.-Mexico border to the south. There is one small, privately owned area within the boundaries of the Tohono O'odham Nation that is disconnected from the main section of this subunit. It is located approximately 1.2 km (0.75 mi) west of the main, largest section and approximately 10 km (6.2 mi) north of the U.S.-Mexico border. Land ownership within the unit includes approximately 624 ha (1,543 ac) of Federal lands; 6,157 ha (15,213 ac) of Arizona State lands; and 1,843 ha (4,555 ac) of private lands. The Federal land is administered by the Service and Bureau of Land Management. The Southern Baboquivari Subunit provides connectivity to Mexico and was not occupied at the time of listing, but is essential to the conservation of the jaguar because it contributes to the species' persistence by providing connectivity to occupied areas.

The primary land uses within Subunit 1b include ranching, grazing, border-related activities, Federal land management activities, and recreational activities throughout the year, including, but not limited to, hiking, birding, horseback riding, and hunting.

#### *Unit 2: Atascosa Unit*

Unit 2 consists of 58,625 ha (144,865 ac) in the Pajarito, Atascosa, and Tumacacori Mountains in Pima and Santa Cruz Counties, Arizona. Unit 2 is generally bounded by the eastern side of San Luis Mountains (Arizona) to the west, roughly 4 km (2.5 mi) south of Arivaca Road to the north, Interstate 19 to the east, and the U.S.-Mexico border

to the south. Land ownership within the unit includes approximately 53,807 ha (132,961 ac) of Federal lands; 2,296 ha (5,672 ac) of Arizona State lands; and 2,522 ha (6,231 ac) of private lands. The Federal land is administered by the Coronado National Forest and Bureau of Land Management. We consider the Atascosa Unit occupied at the time of listing (37 FR 6476; March 30, 1972) (see "Occupied Area at the Time of Listing" section, above), and it may be currently occupied based on multiple photos of two, or possibly three, jaguars from 2001–2008 (see Table 1 in the "Class I Records" section, above). It contains all elements of the physical or biological feature essential to the conservation of the jaguar.

The primary land uses within Unit 2 include Federal land management activities, border-related activities, grazing, and recreational activities throughout the year, including, but not limited to, hiking, camping, birding, horseback riding, picnicking, sightseeing, and hunting. Activities that may require special management may include, for example, habitat clearing, the construction of facilities, expansion of linear projects that may fragment jaguar habitat, some fuels-management activities, and some prescribed fire.

#### *Unit 3: Patagonia Unit*

Unit 3 consists of 142,248 ha (351,501 ac) in the Patagonia, Santa Rita, Empire, and Huachuca Mountains, as well as the Canelo and Grosvenor Hills, in Pima, Santa Cruz, and Cochise Counties, Arizona. Unit 3 is generally bounded by a line running roughly 3 km (1.9 mi) east of Interstate 19 to the west; a line running roughly 6 km (3.7 mi) south of Interstate 10 to the north; Cienega Creek and Highways 83, 90, and 92 to the east, including the eastern slopes of the Empire Mountains; and the U.S.-Mexico border to the south. Land ownership within the unit includes approximately 101,354 ha (250,452 ac) of Federal lands; 11,847 ha (29,274 ac) of Arizona State lands; and 29,046 ha (71,775 ac) of private lands. The Federal land is administered by the Coronado National Forest, Bureau of Land Management, and National Park Service. We consider the Patagonia Unit occupied at the time of listing (37 FR 6476; March 30, 1972) based on the 1965 record from the Patagonia Mountains (see "Occupied Area at the Time of Listing" section, above) and currently occupied based on photos taken from October 2012, through September 11, 2013, of a male jaguar in the Santa Rita Mountains (see Table 1 in the "Class I Records" section, above). The mountain ranges within this unit contain all elements of the physical

or biological feature essential to the conservation of the jaguar.

The primary land uses within Unit 3 include Federal land management activities, border-related activities, grazing, and recreational activities throughout the year, including, but not limited to, hiking, camping, birding, horseback riding, picnicking, sightseeing, and hunting. Activities that may require special management may include, for example, habitat clearing, the construction of facilities, expansion of linear projects that may fragment jaguar habitat, some fuels-management activities, and some prescribed fire.

#### *Unit 4: Whetstone Unit*

**Subunit 4a—Whetstone Subunit:** Subunit 4a consists of 25,284 ha (62,479 ac) in the Whetstone Mountains, including connections to the Santa Rita and Huachuca Mountains, in Pima, Santa Cruz, and Cochise Counties, Arizona. Subunit 4a is generally bounded by a line running roughly 4 km (2.5 mi) east of Cienega Creek to the west, a line running roughly 6 km (3.7 mi) south of Interstate 10 to the north, Highway 90 to the east, and Highway 82 to the south. Land ownership within the subunit includes approximately 16,066 ha (39,699 ac) of Federal lands; 5,445 ha (13,455 ac) of Arizona State lands; and 3,774 ha (9,325 ac) of private lands. The Federal land is administered by the Coronado National Forest and Bureau of Land Management. We consider the Whetstone Subunit 4a occupied at the time of listing (37 FR 6476; March 30, 1972) (see "Occupied Area at the Time of Listing" section, above), and, based on photographs taken in 2011, it may be currently occupied (see Table 1 in the "Class I Records" section, above). The mountain range within this subunit contains all elements of the physical or biological feature essential to the conservation of the jaguar, except for connectivity to Mexico.

The primary land uses within Subunit 4a include Federal land management activities, grazing, and recreational activities throughout the year, including, but not limited to, hiking, camping, birding, horseback riding, picnicking, sightseeing, and hunting. Activities that may require special management may include, for example, habitat clearing, the construction of facilities, expansion of linear projects that may fragment jaguar habitat, some fuels-management activities, and some prescribed fire.

**Subunit 4b—Whetstone-Santa Rita Subunit:** Subunit 4b consists of 5,143 ha (12,710 ac) between the Empire Mountains and northern extent of the Whetstone Mountains in Pima County,

Arizona. Subunit 4b is generally bounded by (but does not include): The eastern slopes of the Empire Mountains to the west, a line running roughly 6 km (3.7 mi) south of Interstate 10 to the north, the western slopes of the Whetstone Mountains to the east, and Stevenson Canyon to the south. Land ownership within the subunit includes approximately 532 ha (1,313 ac) of Federal lands and 4,612 ha (11,396 ac) of Arizona State lands. The Whetstone-Santa Rita Subunit provides connectivity from the Whetstone Mountains to Mexico and was not occupied at the time of listing, but is essential to the conservation of the jaguar because it contributes to the species' persistence by providing connectivity to occupied areas.

The primary land uses within Subunit 4b include grazing and recreational activities throughout the year, including, but not limited to, hiking, camping, birding, horseback riding, picnicking, sightseeing, and hunting.

**Subunit 4c—Whetstone-Huachuca Subunit:** Subunit 4c consists of 7,722 ha (19,081 ac) between the Huachuca Mountains and southern extent of the Whetstone Mountains in Santa Cruz and Cochise Counties, Arizona. Subunit 4c is generally bounded by Highway 83, Elgin-Canelo Road, and Upper Elgin Road to the west; Highway 82 to the north; a line running roughly 4 km (2.5 mi) west of Highway 90 to the east; and up to but not including the Huachuca Mountains to the south. Land ownership within the subunit includes approximately 1,350 ha (3,336 ac) of Federal lands; 2,981 ha (7,366 ac) of Arizona State lands; and 3,391 ha (8,379 ac) of private lands. The Federal land is administered by the Coronado National Forest and Bureau of Land Management. The Whetstone-Huachuca Subunit provides connectivity from the Whetstone Mountains to Mexico and was not occupied at the time of listing, but is essential to the conservation of the jaguar because it contributes to the species' persistence by providing connectivity to occupied areas.

The primary land uses within Subunit 4c include Federal forest management activities, grazing, and recreational activities throughout the year, including, but not limited to, hiking, camping, birding, horseback riding, picnicking, sightseeing, and hunting.

#### *Unit 5: Peloncillo Unit*

Unit 5 consists of 41,571 ha (102,724 ac) in the Peloncillo Mountains in Cochise County, Arizona, and Hidalgo County, New Mexico. Unit 5 is generally bounded by the eastern side of the San Bernardino Valley to the west, Skeleton

Canyon Road and the northern boundary of the Coronado National Forest to the north, the western side of the Animas Valley to the east, and the U.S.-Mexico border on the south. Land ownership within the unit includes approximately 28,393 ha (70,160 ac) of Federal lands; 7,861 ha (19,426 ac) of Arizona State lands; and 5,317 ha (13,138 ac) of private lands. The Federal land is administered by the Coronado National Forest and Bureau of Land Management. We consider the Peloncillo Unit occupied at the time of listing (37 FR 6476; March 30, 1972) (see "Occupied Area at the Time of Listing" section, above), and it may be currently occupied based on a track documented in 1995 and photographs taken in 1996 (see Table 1 in the "Class I Records" section, above). It contains all elements of the physical or biological feature essential to the conservation of the jaguar.

The primary land uses within Unit 5 include Federal land management activities, border-related activities, grazing, and recreational activities throughout the year, including, but not limited to, hiking, camping, birding, horseback riding, picnicking, sightseeing, and hunting. Activities that may require special management may include, for example, habitat clearing, the construction of facilities, expansion of linear projects that may fragment jaguar habitat, some fuels-management activities, and some prescribed fire.

#### *Unit 6: San Luis Unit*

Unit 6 consists of 3,122 ha (7,714 ac) in the northern extent of the San Luis Mountains in Hidalgo County, New Mexico. Unit 6 is generally bounded by the eastern side of the Animas Valley to the west, a line running roughly 1.5 km (0.9 mi) south of Highway 79 to the north, an elevation line at approximately 1,600 m (5,249 ft) on the east side of the San Luis Mountains, and the U.S.-Mexico border to the south. Land within the unit is entirely privately owned. We consider the San Luis Unit occupied at the time of listing (37 FR 6476; March 30, 1972) (see "Occupied Area at the Time of Listing" section, above), and it may be currently occupied based on photographs taken in 2006 (see Table 1 in the "Class I Records" section, above). Unit 6 contains almost all elements of the physical or biological feature essential to the conservation of the jaguar except for expansive open space of at least 100 km<sup>2</sup> (38.6 mi<sup>2</sup>). This unit is included because, while by itself it does not provide at least 100 km<sup>2</sup> (38.6 mi<sup>2</sup>) of jaguar habitat in the United States, additional habitat can be found

immediately adjacent south of the U.S.-Mexico border, and, therefore, this area represents a small portion of a much larger area of habitat.

The primary land uses within Unit 6 include border-related activities, grazing, and some recreational activities throughout the year, including, but not limited to, hiking, horseback riding, and hunting. Activities that may require special management may include, for example, habitat clearing, the construction of facilities, expansion of linear projects that may fragment jaguar habitat, some fuels-management activities, and some prescribed fire.

### **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 adverse modification of designated critical habitat of such species. In addition, section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under the Act or result in the destruction or adverse modification of proposed critical habitat.

Decisions by the 5th and 9th Circuit Courts of Appeals have invalidated our regulatory definition of "destruction or adverse modification" (50 CFR 402.02) (see *Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service*, 378 F.3d 1059 (9th Cir. 2004) and *Sierra Club v. U.S. Fish and Wildlife Service et al.*, 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 role 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 us. Examples of actions that are subject to the section 7 consultation process are actions on State, tribal, 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, tribal, local, or private lands that are not federally funded or authorized, do not require section 7 consultation.

As a result of section 7 consultation, we document compliance with the requirements of section 7(a)(2) through our 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*

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.

Section 7(a)(2) of the Act requires Federal agencies to ensure their actions do not jeopardize the continued existence of listed species or destroy or adversely modify critical habitat. 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 role for the species with implementation of the proposed action after taking into account any anticipated cumulative effects (Service 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 jaguar. 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.

In general, there are five possible outcomes in terms of how proposed Federal actions may affect the PCEs or physical or biological feature of jaguar critical habitat: (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 feature of jaguar critical habitat do not require section 7 consultation, although such actions may still have adverse or beneficial effects on the species itself that require consultation. Examples of these actions may include grazing, ranching operations, routine border security activities, or limited recreational activity, which we anticipate would not result in adverse effects or adverse modification to jaguar critical habitat, but may still require

section 7 review for effects to the species itself.

Actions with effects to the PCEs or physical and biological feature of jaguar critical habitat that are discountable, insignificant, or wholly beneficial are 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. Examples of these actions may include some fuels-management activities, prescribed fire, or closing and re-vegetating roads.

Actions with adverse effects to the PCEs or physical or biological feature in the short term, but that result over the long term in an improvement in the function of the habitat to the jaguar would likely not constitute adverse modification of critical habitat either, although due to the adverse effects, these actions may require formal consultation. We anticipate that actions consistent with the stated goals or recovery actions of the Recovery Outline for the Jaguar (Jaguar Recovery Team 2012, entire) or the future recovery plan for the species, once completed, would fall into this category.

Actions that are likely to adversely affect the PCEs or physical or biological feature of jaguar 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 jaguar critical habitat. Some activities may adversely affect the PCEs, but not result in adverse modification of critical habitat. Activities that may destroy or adversely modify critical habitat are those that alter the essential physical or biological feature 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 jaguar critical habitat is to provide areas to support some individuals during transient movements by providing patches of habitat (perhaps in some cases with a few resident jaguars), and as areas for cyclic expansion and contraction of the nearest core area and breeding population in the Northwestern Recovery Unit. Therefore, actions that could destroy or adversely modify jaguar critical habitat include those that would permanently sever connectivity to Mexico or within a critical habitat unit such that movement of jaguars between habitat in the United States and Mexico is eliminated. In general, such activities could include building impermeable fences (such as

pedestrian fences discussed in *Special Management Considerations or Protection*, above) in areas of vegetated rugged terrain or major road construction projects (such as new highways or significant widening of existing highways). Activities that may adversely affect the PCEs (such as permanently displacing native prey species, increasing the distance to water to more than 10 km (6.2 mi), removing tree cover, altering rugged terrain, or appreciably increasing human presence on the landscape), but may not destroy or adversely modify critical habitat could include habitat clearing, the construction of facilities, or expansion of linear projects that may fragment jaguar habitat and reduce the amount of habitat available but that do not permanently sever essential movement between the United States and Mexico or within a given critical habitat unit.

At this time, we do not anticipate activities such as grazing, ranching operations, or limited recreational activity would have adverse effects to jaguar critical habitat, nor do we anticipate activities consistent with the stated goals or recovery actions of the Recovery Outline for the Jaguar (Jaguar Recovery Team 2012, entire) or the future recovery plan for the species would constitute adverse modification. We also do not anticipate further impermeable fencing being built in areas with rugged terrain, as technological solutions (such as video surveillance) for Homeland Security purposes are more likely to be applied in these areas. We also are unaware of any plans to expand highways through jaguar critical habitat. We are aware of two large-scale mining operations. One is the Rosemont Mine that has been evaluated within jaguar revised proposed critical habitat (this consultation was completed prior to this final rule designating critical habitat). We have evaluated this project through the section 7 consultation process, and our determination is that it does not constitute destruction or adverse modification of jaguar critical habitat. The other is the Hermosa Mine, but this project is only in the planning phase and the Service has not received mine development plans. Consequently, section 7 consultation has not been initiated.

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### 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 critical habitat designation for the jaguar to determine if they meet the criteria for exemption from critical habitat under section 4(a)(3) of the Act. The following areas are Department of Defense lands with completed, Service-approved INRMPs within the final critical habitat designation.

#### *Approved INRMPs*

Fort Huachuca—Unit 3 and Subunit 4c, Arizona

Fort Huachuca is located in Cochise County, in southeast Arizona, about 24 km (15 mi) north of the border with Mexico. Fort Huachuca is home to the U.S. Army Intelligence Center and the U.S. Army Network Enterprise Technology Command (NETCOM)/9th Army Signal Command. There are approximately 6,421 ha (15,867 ac) of critical habitat on Fort Huachuca. Approximately 6,117 ha (15,115 ac) are in Unit 3, and approximately 304 ha (752 ac) are in Subunit 4c.

Habitat features essential to jaguar conservation exist on Fort Huachuca. Nearly 95 percent of the activities on Fort Huachuca are military intelligence and communications systems testing and training. Other activities on the installation include field-training exercises, aviation activities, live-fire qualification and training, vehicle maneuver training, and administrative and support activities. Fort Huachuca's military mission is not heavily land-based. Generally, direct and repeated impacts have been restricted to localized areas. Fort Huachuca has an approved INRMP, completed in 2002 and updated in 2013 to specifically address the jaguar. Appendix 7 was added to focus on specific benefits of the INRMP to federally listed species, including the jaguar. Appendix 7 outlines how INRMP management actions provide conservation benefits for the jaguar. These actions include: ecosystem and hunting management intended to ensure adequate jaguar prey; water resource protection measures; fire management activities that maintain canopy cover; prohibition of recreation at night; briefings on threatened and endangered species; and a cooperative relationship with the University of Arizona's Wild Cat Research and Conservation Center. The U.S. Army is committed to working closely with the Service and Arizona Game and Fish Department to continually refine the existing INRMP as part of the Sikes Act's INRMP review process. Based on our review of the INRMP for this military installation, and in accordance with section 4(a)(3)(B)(i) of the Act, we

have determined that the portion of Unit 3 and Subunit 4c within this installation, identified as meeting the definition of critical habitat, is subject to the INRMP, and that conservation efforts identified in this INRMP will provide a benefit to the jaguar. Therefore, lands within this installation are exempt from critical habitat designation under section 4(a)(3)(B) of the Act.

Fort Huachuca's 2013 INRMP includes benefits for jaguars and their habitat that were not included in their previous INRMP. The INRMP protects the PCEs, through:

- (1) Providing connectivity to Mexico
  - a. Providing connectivity to Mexico through lands owned by the Fort by maintaining wildlife-permeable fencing around the perimeter of the Fort;
  - b. Minimal training and testing occurring in the rugged areas of the Huachuca Mountains because the vast majority of training and testing can effectively be conducted elsewhere (access to the mountains is limited by rugged topography and single lane, four-wheel drive dirt roads);
  - c. Maintaining large open areas in the mountains on the Fort by avoiding construction activities in those areas;
  - d. Developing partnerships to protect land and natural resources beyond the installation and across administrative boundaries;
  - i. Obtaining conservation easements on private lands from private landowners within the Sierra Vista subwatershed (an area of approximately 6,475 km<sup>2</sup> (2,500 mi<sup>2</sup>) in size containing the Fort, City of Sierra Vista, Huachuca City, and most of the San Pedro Riparian National Conservation Area) to reduce the potential for incompatible land use by buffering agricultural and undeveloped areas under airspace and to manage the regional water table adjacent to the San Pedro Riparian National Conservation Area through the Army Compatible Use Buffer Program.
- (2) Containing adequate levels of native prey
  - a. Employing an ecosystem management approach benefiting all native species, including jaguars and their prey;
  - b. Coordinating with the Arizona Game and Fish Department to limit the number of deer and javelina hunting permits issued within the Fort's boundaries to ensure adequate prey are available for the top predators known to occur on the installation.
- (3) Including surface water sources within 20 km (12.4 mi) of one another:
  - Managing pond and spring habitat on the installation for threatened and endangered species, especially where

habitat has been degraded or lost or where potential exists for improving habitat.

- (4) Containing greater than 1 percent to 50 percent canopy cover

- a. Coordinating on prescribed fire and fuel management activities in the Huachuca Mountains with the U.S. Forest Service, State Parks, State Lands, The Nature Conservancy, San Pedro National Conservation Area, Audubon Research Ranch, and private ranchers, and as specified in the Fort's Integrated Wildland Fire Management Plan such that natural fire regimes will eventually be restored;

- b. Managing invasive species to protect natural resources and critical habitat for threatened and endangered species.

- (5) Characterized by intermediately, moderately, or highly rugged terrain:
  - No activities occurring or planned to occur in the mountains affecting or altering the terrain.

- (6) Characterized by minimal to no human population

- a. Controlling human activity and road/infrastructure development in potential jaguar habitat (no major roads occur within the installation);

- b. Closing all canyons within the Huachuca Mountains to recreational use between sunset and sunrise (the most active time for jaguars);

- c. Minimizing impacts from field training activities by conducting these activities outside of mountainous areas, except for a minimal amount of equipment testing along roadsides;

- d. Providing environmental awareness training to Special Forces units that occasionally request conducting patrolling training in the mountains to minimize their impact on jaguars and jaguar habitat;

- e. Maintaining dark skies in mountainous areas within the installation;

- f. Minimizing impacts from low-level helicopter and Unmanned Aerial Systems flights (the predominant types of flights conducted over the Fort) by avoiding them over the Huachuca Mountains at altitudes below 152 m (500 ft) above ground level, except for life, health and safety purposes.

- (7) Providing additional ongoing activities benefiting the jaguar

- a. Cooperating with the University of Arizona's Wild Cat Research and Conservation Center to permit surveying and monitoring for the jaguar on the installation;

- b. Providing threatened and endangered species awareness training to troops [in safety briefings];

- c. Completing game species management plans (including hunting);

- d. Installing and maintaining all-weather signs along the single-lane dirt roads within Huachuca and Garden Canyons, and their tributary canyons with trails, that inform visitors that the Canyon is home to sensitive species and require visitors to stay on trails and be as quiet and unobtrusive as possible;

- e. Ensuring that no seeding/planting of nonnative grasses or other plants will occur on the installation that may alter fire frequencies in the wildland areas;

- f. Employing an adaptive management framework providing natural resources management at the ecosystem level.

Implementation of these activities on the Fort is currently conducted in a manner that minimizes impacts to jaguars and their habitat. This military installation has an approved INRMP that provides a benefit to the jaguar, and Fort Huachuca has committed to work closely with the Service and the State wildlife agency to continually refine their existing INRMP as part of the Sikes Act's INRMP review process.

Based on the above considerations, and in accordance with section 4(a)(3)(B)(i) of the Act, we have determined that conservation efforts identified in the 2013 INRMP for Fort Huachuca provide a benefit to the jaguar and its habitat. Therefore, lands subject to the INRMP for Fort Huachuca, which includes the lands leased from the Department of Defense by other parties, are exempt from critical habitat designation under section 4(a)(3) of the Act, and we are not including approximately 6,117 ha (15,115 ac) of Unit 3 and approximately 304 ha (752 ac) in Subunit 4c for a total of 6,421 ha (15,867 ac) in this final critical habitat designation because of this exemption.

## Exclusions

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

Section 4(b)(2) of the Act states that the Secretary shall designate and 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 impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if she determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless she 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.

In considering whether to exclude a particular area from the designation, we identify the benefits of including the area in the designation, identify the benefits of excluding the area from the designation, and evaluate whether the benefits of exclusion outweigh the benefits of inclusion. If the analysis indicates that the benefits of exclusion outweigh the benefits of inclusion, the Secretary may exercise her discretion to exclude the area only if such exclusion would not result in the extinction of the species.

When identifying 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.

The principal benefit of including an area in a critical habitat designation is the requirement for Federal agencies 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, the regulatory standard of section 7(a)(2) of the Act under which consultation is completed. Federal agencies must also consult with us on actions that may affect a listed species to ensure their proposed actions are not likely to jeopardize the continued existence of such species. The analysis of effects to critical habitat is a separate step and different standard from that of the effects to the species. Therefore, the difference in outcomes of these two analyses represents the regulatory benefit of critical habitat.

The two regulatory standards are different and, significantly, the factors that are reviewed under each standard are different as well. The jeopardy analysis investigates the action's impact to survival and recovery of the species with a focus on how the action affects attributes such as numbers, distribution, and reproduction of the species. On the other hand, the adverse-modification analysis investigates the action's effects to the designated habitat's contribution to recovery with a focus on the conservation role the habitat plays for the listed species. This difference in the two consultation standards and focus of review, in some instances, will lead to different conclusions. Thus, critical habitat designations may provide greater benefits to the recovery of a species than

would listing alone because it will provide another and alternative focus on factors affecting listed species. Nonetheless, for many species (in at least some locations) the outcome of these analyses in terms of any required habitat protections will be similar because effects to habitat will often also result in effects to the species.

When identifying the benefits of exclusion, we consider, among other things, whether exclusion of a specific area due to the continuation, strengthening, or encouragement of partnerships, or implementation of a management plan that provides equal to or more conservation than a critical habitat designation would provide.

In the case of the jaguar, the benefits of critical habitat include public awareness of jaguar presence and the importance of habitat protection, and in cases where a Federal nexus exists, increased habitat protection for the jaguar due to the protection from adverse modification or destruction of critical habitat. In practice, a Federal nexus exists primarily on Federal lands or for projects undertaken, permitted, or funded by Federal agencies. Since jaguars were listed in 1972, we have had no projects on privately owned lands that had a Federal nexus to trigger formal consultation under section 7 of the Act. On Federal lands, we have been consulting with Federal agencies on their effects to jaguar since jaguars were listed.

When we evaluate the existence of a conservation plan when considering the benefits of exclusion, we consider a variety of factors, including but not limited to, whether the plan is finalized; how it provides for the conservation of the essential physical or biological features; whether there is a reasonable expectation that the conservation management strategies and actions contained in a management plan will be implemented into the future; whether the conservation strategies in the plan are likely to be effective; and whether the plan contains a monitoring program or adaptive management to ensure that the conservation measures are effective and can be adapted in the future in response to new information.

After identifying the benefits of inclusion and the benefits of exclusion, we carefully weigh the two sides to evaluate whether the benefits of exclusion outweigh those of inclusion. If our analysis indicates that the benefits of exclusion outweigh the benefits of inclusion, we then determine whether exclusion would result in extinction. If exclusion of an area from critical habitat will result in extinction, we will not exclude it from the designation.

Based on the information provided by entities seeking exclusion, as well as any additional public comments we received, we evaluated whether certain lands in the proposed critical habitat were appropriate for exclusion from this final designation pursuant to section 4(b)(2) of the Act. We are excluding approximately 20,764 ha (51,308 ac) of Tohono O'odham Nation land in Subunit 1a and approximately 10,829 ha (26,759 ac) of Tohono O'odham Nation land in Subunit 1b from the final designation of critical habitat (see *Exclusions Based on Other Relevant Impacts* below).

#### *Exclusions Based on Economic Impacts*

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 of the proposed critical habitat designation and related factors (78 FR 39237; July 1, 2013). The draft economic analysis, dated May 2013, was made available for public review from July 11, 2013, through August 9, 2013 (78 FR 39237; July 1, 2013), and again from August 29, 2013, through September 13, 2013 (78 FR 53390; August 29, 2013). Following the close of the comment period, a final analysis (dated January 15, 2014) of the potential economic effects of the designation was developed taking into consideration the public comments and any new information (IEC 2014).

The intent of the final economic analysis is to quantify the economic impacts of all potential conservation efforts for the jaguar; some of these costs will likely be incurred regardless of whether we designate critical habitat. 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, considering protections already in place for the species (e.g., under the Federal listing and other Federal, State, and local regulations). The baseline, therefore, represents the costs incurred regardless of whether critical habitat is designated. The "with critical habitat" scenario describes the incremental impacts associated specifically with the designation of critical habitat for the species. The incremental conservation efforts and associated impacts are those not expected to occur absent 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 analysis looks retrospectively at baseline impacts incurred since the species was listed, and forecasts both baseline and incremental impacts likely to occur with the designation of critical habitat. For a further description of the methodology of the analysis, see Chapter 2, Framework for the Analysis of the economic analysis.

The final economic analysis 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. The final economic analysis evaluates potential lost economic efficiency associated with residential and commercial development and public projects and activities, such as economic impacts on water management and transportation projects, Federal lands, small entities, and the energy industry. Decision-makers can use this information to assess whether the effects of the designation might unduly burden a particular group or economic sector. Finally, the final economic analysis considers those costs that may occur in the 20 years following the 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 final economic analysis quantifies economic impacts of jaguar conservation efforts associated with the following categories of activity: (1) Federal land management; (2) border protection activities; (3) mining; (4) transportation activities; (5) private residential or commercial development; (6) military activities; (7) livestock grazing and other activities; (8) Tohono O'odham Nation activities; and (9) other limited activities. Given the secretive and transient nature of the jaguar, which makes it difficult to determine whether a particular area is used by jaguars, Federal land managers already take steps to protect the jaguar even without critical habitat by consulting under section 7 jeopardy standards. We do not anticipate recommending incremental conservation measures to avoid adverse modification of critical habitat over and above those recommended to avoid jeopardy of the species, except in cases where an activity could create a situation in which a unit of critical habitat could become inaccessible to

jaguars. Major construction projects (such as new highways, significant widening of existing highways, or construction of large facilities or mines) could sever connectivity within these critical habitat units and subunits and could constitute adverse modification. Estimated baseline costs range from \$2.8 million to \$3.9 million in the first 20 years, with a seven and three percent discount rate, respectively. The total potential incremental economic impacts for all of the categories in areas proposed as revised critical habitat over the next 20 years range from \$4.2 million to \$5.6 million (\$370,000 to \$370,000 annualized), assuming a seven and three percent discount rate, respectively. The analysis estimates future potential administrative impacts based on the historical rate of consultations on the jaguar in areas proposed for critical habitat, as discussed in Chapter 2 of the final economic analysis. A brief summary of the estimated impacts within each category is provided below. Please refer to the final economic analysis for a comprehensive discussion of the potential impacts.

Since the jaguar is currently a listed species under the Act, baseline efforts are likely already undertaken to protect the jaguar. In addition, efforts to protect other endangered and threatened species in the area, and the implementation of general conservation measures by land managers likely also provide protection for jaguars. Depending on the discount rate applied, we estimate that these baseline costs will range from \$2.8 million and \$3.9 million in the first 20 years, with a seven and three percent discount rate, respectively. On an annualized basis, baseline impacts are likely to range from \$240,000 to \$250,000 depending on the discount rate assumption. Additionally, many baseline measures that benefit the jaguar, such as maintenance of habitat and open space, conservation measures for other species, monitoring, and more are not quantified in this analysis due to a lack of cost data on these actions.

**Federal Land Management**—The U.S. Bureau of Land Management (BLM), U.S. Forest Service (USFS), U.S. National Park Service (NPS), and Service land managers in proposed critical habitat areas state that they already consider potential impacts to jaguar when conducting activities within these areas. As such, quantified costs are limited to administrative costs of consultation. Using a seven percent discount rate, baseline costs are \$200,000, or \$18,000 annualized (2013 dollars), and incremental costs are

\$180,000, or \$16,000 annualized (2013 dollars).

**Border Protection**—U.S. Customs and Border Protection (CBP) reports that the agency already considers potential impacts of its operations on jaguar in all critical habitat units. Under section 102 of the Illegal Immigration Reform and Immigrant Responsibility Act, the Secretary of the Department of Homeland Security (DHS) is authorized to waive laws where the Secretary of DHS deems it necessary to ensure the expeditious construction of border infrastructure in areas of high illegal entry. However, the CBP does not always waive compliance with the ESA and does engage in section 7 consultation with the Service.

The CBP does not currently anticipate that planned activities in critical habitat areas will cause permanent changes to landscape or sever connectivity to Mexico. Furthermore, the CBP does not anticipate that jaguar critical habitat will change the outcome of future section 7 consultations regarding jaguar and its habitat associated with border operations in critical habitat areas. As such, quantified incremental costs are limited to administrative costs of consultation. Incremental costs, which are estimated to include the additional administrative costs of considering critical habitat in consultation, are anticipated to be \$17,000, or \$1,500 annualized. While specific future conservation efforts are unknown, we utilize available data on past conservation efforts to estimate that CBP will spend approximately \$48,000 per year on jaguar monitoring efforts, as well as \$312,000 per consultation on other actions. Using the past consultation as a guide to the number of future actions, we anticipated that in total, using a seven percent discount rate, baseline costs will be \$770,000 over 20 years, or \$68,000 annualized (2013 dollars), related to approximately two formal consultations over the next 20 years. Incremental costs, which are estimated to include the additional administrative costs of considering critical habitat in consultation, are anticipated to be \$17,000, or \$1,500 annualized (2013 dollars).

**Mining**—Incremental project modifications beyond what would have been recommended under the baseline to avoid jeopardy are generally unlikely, unless a project is likely to permanently alter habitat or sever connectivity to Mexico. The Service and a number of land managers agree that few changes to recommendations resulting from consultations in response to critical habitat designation are expected because mining activity generally occurs

in Unit 3, which is considered occupied by the jaguar. However, to the extent that additional conservation efforts are undertaken for critical habitat, estimates of incremental impacts would be understated in the economic analysis.

Overall, baseline costs are estimated at \$1.2 million (\$110,000 on an annualized basis), of which \$66,000 (\$5,800 on an annualized basis) are administrative impacts. Most of these costs are likely to occur as a result of baseline conservation measures implemented for the protection of the jaguar, such as road-kill monitoring and the minimization of nighttime lighting; however, we are unable to fully quantify those costs. Although they are included in the baseline estimates where possible, some of these baseline conservation measures are intended to benefit multiple species, and therefore only a portion of these costs may be attributed to conservation of the jaguar.

There are two large-scale mining projects proposed in critical habitat Unit 3, the Rosemont Copper Project and the Hermosa Project, as well as smaller-scale mineral exploration projects. Forecast incremental economic impacts associated with mining operations include costs of addressing adverse modification of critical habitat in the context of a section 7 consultation, as well as costs of implementing associated conservation measures. The incremental analysis forecasts \$3.9 million (\$340,000 on an annualized basis) in present-value impacts associated with all of the aforementioned mining activities, of which \$22,000 (\$1,900 annually) are administrative costs.

In October 2013, the Service completed a biological opinion and conference opinion with the U.S. Forest Service providing Federal approval of the Rosemont Mine. The biological opinion concluded that the Rosemont Mine would not constitute jeopardy to the jaguar. A conference opinion was also completed to address the impacts of the Rosemont Mine to the then-proposed critical habitat designation for jaguar, which concluded that the mining operation is not likely to destroy or adversely modify jaguar critical habitat.

The Rosemont Mine is located in a unit of critical habitat that is occupied by the jaguar. Since the jaguar is currently a listed species, conservation efforts are already undertaken to avoid jeopardy to the species in this area and, therefore, the economic impacts are predominantly captured in the baseline. Through our evaluation of impacts of the critical habitat designation, we determined that most of the conservation efforts are not a result of the critical habitat designation itself, but

rather a result of the jaguar being a listed species, and, therefore, incremental impacts of the critical habitat designation are largely limited to transactional costs. As a result, the incremental impact, economic or from other relevant factors, of the designation on the mine is expected to be minimal.

Forecast conservation measures are primarily associated with conservation efforts in the biological opinion issued for the Rosemont Mine in October 2013, which includes multiple species in addition to the jaguar. We note that costs associated with incremental project modifications for the Rosemont Mine are included, to the extent that cost information was available. In addition, incremental costs may be associated with conservation measures such as restoration of surface springs and revegetation, but information on the incremental costs of these measures was not available. The conference opinion notes that some of these efforts, including the management of conservation lands, will be undertaken to benefit multiple species, in addition to the jaguar. Therefore, these costs may overstate the incremental impacts of jaguar critical habitat designation alone.

**Transportation**—Arizona Department of Transportation (ADOT) already considers potential impacts of its projects on jaguar in the three Arizona counties where critical habitat for the jaguar is proposed. No major roads intersect the proposed critical habitat area in New Mexico. While the construction of new roads has the potential to sever connectivity of jaguar habitat, no such projects are planned in critical habitat areas in the foreseeable future. We estimate that approximately two formal consultations and seven technical assistance efforts will occur related to minor transportation projects over the next 20 years in the critical habitat areas. Incremental costs are estimated to be \$5,900, or \$520 annualized (2013 dollars). Baseline costs are estimated at \$390,000, or \$34,000 annualized (2013 dollars), discounted at seven percent.

**Private Residential or Commercial Development**—The vast majority of the 129,246 acres of privately owned lands designated as jaguar critical habitat are rural and fall outside of any major urban areas. County planners state that these areas are unlikely to be developed in the foreseeable future, with the exception of areas around Patagonia, Santa Cruz County, Arizona, (population as of 2010 was 3,213 U.S. Census Bureau) in Unit 3 and on the eastern border of Unit 2. However, even if these areas are developed, there are unlikely to be any Federal permits or Federal funding for

development activities in the privately owned areas designated as jaguar critical habitat. While local ranchers do take advantage of Natural Resources Conservation Service (NRCS) programs, these programs are not expected to play a role in development activities. As such, future consultations related to residential and commercial development activities are not currently anticipated in the critical habitat areas. No incremental impacts of critical habitat designation on residential or commercial development are forecast.

**Military**—While the jaguar has not recently been documented at Fort Huachuca in Unit 3 and Subunit 4c, the Department of Defense (DOD) is aware that the species can be present and has incorporated the species into its management planning. Both baseline and incremental costs are limited to the administrative costs of consultation. Using a seven percent discount rate, baseline costs are estimated to be \$10,000, or \$900 annualized over the next 20 years (2013 dollars), and incremental costs are \$20,000, or \$1,700 annualized (2013 dollars).

**Grazing**—In general, most private and State lands in the designated critical habitat areas for the jaguar are currently used for agricultural production, most commonly for livestock grazing. These activities do not typically require Federal permitting or funding for operation. However, many ranchers receive some funding from NRCS, often for conducting range improvements or conservation activities. While consultations on NRCS activities are rare, several public commenters as well as NRCS have noted that some ranchers may withdraw applications for NRCS funding following jaguar critical habitat in order to avoid any potential obligations related to consultations between NRCS and the Service. Total administrative baseline impacts to grazing and agriculture are \$14,000, or \$1,200 annualized over the next 20 years (2013 dollars). Incremental costs, including administrative costs of consultation, are \$24,000, or \$2,100 annualized over the next 20 years (2013 dollars).

**Tribal Activities**—Due to the trust relationship between the United States and Native Americans, a significant number of Tribal activities involve Federal funding or oversight that serve as a nexus for section 7 consultation. Therefore, where critical habitat is designated on Tribal lands, many projects will have a Federal nexus for section 7 consultation. Communication with the Tohono O'odham Nation did not identify any specific, planned projects that may result in section 7

consultation. We are also not aware of any previous section 7 consultations regarding activities on Tohono O'odham Nation lands. However, given the likelihood of a Federal nexus and the proposal to designate unoccupied critical habitat on Tohono O'odham lands, the Tohono O'odham Nation could have incurred incremental administrative impacts as a result of the designation. Costs associated with one fully incremental formal consultation considering adverse modification of critical habitat are expected to be \$20,000, of which \$3,500 could be incurred by the Tohono O'odham Nation. However, the Secretary has used her discretion to exclude the Tohono O'odham Nation based on our ongoing

and effective working partnership with the Tohono O'odham Nation to promote the conservation of listed species, including the jaguar and its habitat.

*Other Activities*—Limited other activities occur within the critical habitat area. We use historical rates of consultation for activities not described above to determine future rates of consultation for other activities. Agencies involved in these consultations have included: the Federal Energy Regulatory Commission (FERC), U.S. Department of Energy, the Corps, Arizona Department of Environmental Quality, the Arizona Department of Water Resources, the U.S. Environmental Protection Agency, the U.S. Department of Agriculture (USDA), the Federal Communications

Commission, the Animal and Plant Health Inspection Service, the Federal Aviation Administration, the Federal Emergency Management Agency, and other Federal and non-Federal agencies. In particular, the proposed Sierrita natural gas pipeline may cross the designated areas and would have a Federal nexus through the Federal Energy Regulatory Commission (FERC). Due to limited additional conservation efforts resulting from consultation, we estimate only administrative costs of consultation. Baseline impacts are \$180,000, or \$16,000 annualized over the next 20 years (2013 dollars), and incremental impacts are \$82,000, or \$7,300 annualized over the next 20 years (2013 dollars).

TABLE 5—SUMMARY OF FORECAST INCREMENTAL IMPACTS BY ACTIVITY, 2013 TO 2032

[Seven percent discount rate]

Activity	Present value	Annualized	Percent of total impacts	Potential additional impacts
Federal lands management .....	\$180,000	\$16,000	4.4	If mining companies choose not to proceed to production due to the designation of critical habitat, economic activity that would have been associated with the mines would not occur.
Border protection .....	\$17,000	\$1,500	0.4	
Mining .....	\$3,900,000	\$340,000	92	
Transportation .....	\$5,900	\$520	0.1	If mining plans move forward, incremental changes to planned road improvements could occur that themselves could result in conservation efforts for jaguar that are not captured in this analysis.
Development .....	\$0	\$0	0	It is possible that some ranchers may withdraw applications for NRCS funding following jaguar critical habitat in order to avoid any potential obligations to consult with the Service.
Military .....	\$20,000	\$1,700	5.50	
Grazing .....	\$24,000	\$2,100	0.5	
Other .....	\$82,000	\$7,300	.06	Administrative or project modification costs associated with future projects on Tohono O'odham Nation lands. Negative economic impacts on the Nation's ability to manage its lands independent of Federal oversight.
Tribal .....	Unquantified	Unquantified	0	
Total: .....	\$420,000,000	\$3,700,000	100	

**Note:** Totals may not sum due to rounding.

Our economic analysis did not identify any disproportionate costs that are likely to result from the designation. Consequently, the Secretary is not exerting her discretion to exclude any areas from this designation of critical habitat for the jaguar based on economic impacts.

A copy of the final economic analysis with supporting documents may be obtained by contacting the Arizona Ecological Services Fish and Wildlife

Office (see **ADDRESSES**) or by downloading from the Internet at <http://www.regulations.gov>.

#### *Exclusions Based on 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 where a national security impact might exist. In preparing this final rule, we have exempted from the

designation of critical habitat those Department of Defense lands with completed INRMPs determined to provide a benefit to the jaguar. Fort Huachuca lands, as discussed above in *Application of Section 4(a)(3) of the Act* was exempted from designation. There are Department of Defense lands on which the U.S. Customs and Border Protection (CBP) operates along the U.S.-Mexico border. However, we anticipate no impact on national

security. Consequently, the Secretary is not exercising her discretion to exclude any areas from this final designation based on impacts on national security.

#### *Exclusions Based on Other Relevant Impacts*

Under section 4(b)(2) of the Act, we consider any other relevant impacts, in addition 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.

In preparing this final rule, we have determined that there are currently no HCPs or other management plans that address jaguar habitat needs. Accordingly, the Secretary is not exercising her discretion to exclude any areas from this final designation based on HCPs or other private management plans for jaguars. However, below we evaluate impacts to conservation partnerships and consider the government-to-government relationship of the United States with tribal entities.

#### *Tohono O'odham Nation*

The Tohono O'odham Nation is located in southern Arizona on lands in Pima, Pinal, and Maricopa Counties. The Tohono O'odham Nation encompasses 1,133,120 ha (2,800,000 ac) of land and is divided into 11 districts. The Tohono O'odham Nation's eastern boundary is located approximately 24 km (15 mi) west of the city of Tucson, and the administrative center is in the town of Sells, approximately 88 km (55 mi) southwest of Tucson. The revised proposed critical habitat designation within the Tohono O'odham Nation boundaries included approximately 20,764 ha (51,308 ac) in Subunit 1a and approximately 10,829 ha (26,759 ac) in Subunit 1b, totaling 31,593 ha (78,067 ac) of Madrean evergreen woodland and semidesert grassland.

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; and the relevant provision of the Departmental Manual of the Department of the Interior (512 DM 2), we coordinate with federally recognized

Tribes on a government-to-government basis. Further, Secretarial Order 3206, "American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act" (1997) states that (1) critical habitat shall not be designated in areas that may impact tribal trust resources, may impact tribally owned fee lands, or are used to exercise tribal rights unless it is determined essential to conserve a listed species; and (2) in designating critical habitat, the Service 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.

We have conducted government-to-government consultation with the Tohono O'odham Nation regarding the designation of critical habitat for the jaguar and continued to do so throughout the public comment period and during development of this final designation of critical habitat for the jaguar. We sent notification letters on May 16, 2012, September 28, 2012, and September 3, 2013, to the Tribe describing the exclusion process under section 4(b)(2) of the Act and engaged in conversations with the Tribe about the proposal to the extent possible without disclosing predecisional information.

We continue to work with the Tohono O'odham Nation and the BIA on wildlife and plant-related projects, including recovery efforts for Sonoran pronghorn and jaguar, as well as surveys and monitoring for Pima pineapple cactus, jaguar, ocelot, lesser long-nosed bat, and cactus ferruginous pygmy owls. We have established and maintain a cooperative working relationship with the Tohono O'odham Nation and the BIA when they request review of environmental assessments, seek technical advice, and conduct consultations for Tohono O'odham Nation projects. Surveys for any listed species are conducted by the BIA or Tohono O'odham Nation personnel prior to implementation of projects. In April of 2003, the Tohono O'odham Nation and the Service signed a Statement of Relationship, which indicates the Tohono O'odham Nation, through its Natural Resources Department, will work in close collaboration with the Service to provide effective protections for listed species.

As a sovereign entity, the Tohono O'odham Nation seeks to continue to protect and manage their resources according to their traditional and cultural practices. The Tohono O'odham Nation requests that their land be excluded from the designation of critical habitat for the jaguar due to their

sovereign status and their right to manage their own resources. They are concerned that critical habitat designation on their land would limit the Nation's right to self-determination and self-governance. The Tohono O'odham Nation recognizes that their land contains jaguar habitat, and they consider the jaguar to be culturally significant.

#### *(1) Benefits of Inclusion*

As discussed above under *Application of Section 4(b)(2) of the Act*, Federal agencies, in consultation with the Service, must ensure that their actions are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of any designated critical habitat of such species. The difference in the outcomes of the jeopardy analysis and the adverse modification analysis represents the regulatory benefit and costs of critical habitat. Approximately two-thirds of the areas proposed as critical habitat that occur within the Tohono O'odham Nation are considered occupied by the jaguar and, therefore, if a Federal action or permitting occurs, there is a Federal nexus that would result in consultation under section 7 of the Act on these lands whether or not the area is designated as critical habitat. Our section 7 consultation history across the jaguar's range shows that since listing in 1972, no formal consultations have occurred for actions conducted on tribal lands that resulted in adverse effects to jaguars. No formal jaguar consultations have been conducted with the BIA, a likely source of Federal funding for Native American Tribes. Additionally, no informal consultations with agencies implementing actions on tribal lands have been conducted, although we have provided technical assistance on some projects to the Tohono O'odham Nation. Because of how the Tohono O'odham Nation has chosen to manage and conserve its lands and the lack of past section 7 consultation history, we do not anticipate that Tribal actions would considerably change in the future, and we do not anticipate a noticeable increase in section 7.

The draft environmental analysis found that the effects of critical habitat designation on tribal resources are expected to be negligible because (1) new consultations based solely on the presence of designated critical habitat are unlikely, because land managers are already consulting on jaguar throughout the proposed critical habitat areas; and (2) tribal-related activities that currently occur or are anticipated to occur are not likely to require reasonable and prudent

alternatives developed to avoid adverse modification.

Were we to designate critical habitat on Tohono O'odham Nation lands, our section 7 consultation history indicates that there would be few regulatory benefits to the jaguar. As described above, no formal jaguar-related section 7 consultations have occurred on Tribal lands. Further, the Tohono O'odham Nation and the BIA request review of environmental assessments, seek technical advice, and conduct consultations for Tohono O'odham Nation projects. The BIA or Tohono O'odham Nation personnel also conduct surveys for any listed species prior to implementation of projects. In addition, the Tohono O'odham Nation already manages their lands for the benefit of the jaguar and its habitat, adopting voluntary conservation measures on the western side of Unit 1 to ensure habitat protection measures are implemented. For these reasons, it would be highly unlikely that any consultation would result in a determination of adverse modification.

In addition, during coordination with the Tohono O'odham Nation, the Nation indicated that they are not considering any actions that would destroy or adversely modify jaguar critical habitat, they are participating on the Jaguar Recovery Team, and they are implementing a jaguar survey and monitoring project to detect jaguars on Tohono O'odham Nation lands on the west side of the Baboquivari and Coyote Mountains (within Subunits 1a and 1b). Therefore, the Service also does not anticipate that the Tohono O'odham Nation actions would be likely to result in adverse impacts to the jaguar requiring formal section 7 consultations. For these reasons, the beneficial effect of a critical habitat designation on these lands is minimal.

The principal benefit of any designated critical habitat is that activities in and affecting such habitat require consultation under section 7 of the Act. Such consultation would ensure that adequate protection is provided to avoid destruction or adverse modification of critical habitat. However, because no formal consultations have been conducted on tribal lands or with the BIA, and no informal consultations with agencies implementing actions on tribal lands have been conducted; and because Tohono O'odham Nation has chosen to manage and conserve its lands, coordinates with the Service prior to projects, implements jaguar surveys prior to project implementation, and does not foresee any actions that would destroy or adversely modify jaguar

critical habitat, the benefits of a critical habitat designation are minimized.

## (2) Benefits of Exclusion

Benefits of excluding these tribal lands from designated critical habitat include our deference to tribes to develop and implement tribal conservation and natural resource management plans for their lands and resources, which includes the jaguar, and the preservation of our cooperative partnership with the Tohono O'odham Nation. The Service and Tohono O'odham Nation have established and maintain a cooperative conservation partnership for the jaguar, as well as several other listed species that occur on the Nation's lands. Partnership and cooperation have developed through the Jaguar Recovery Team, to which the tribe has appointed a representative. In addition, the Nation is developing a jaguar management plan. While the Service cannot consider draft management plans for exclusions, this plan demonstrates the Nations cooperative conservation partnership with the Service and their commitment to jaguar conservation. In addition, the Nation has been working with the Service to develop a memorandum of agreement to conduct a jaguar survey and monitoring study as identified in the 2012 Jaguar Recovery Outline. Further, the Nation's survey and monitoring plan is consistent with an approved study plan currently under contract with the Service to detect jaguars in the Northwestern Recovery Unit over a 3-year period.

The Tohono O'odham Nation conducts environmental reviews of any project occurring on their lands, which includes surveying for threatened and endangered species (such as the Pima pineapple cactus) and culturally-sensitive species (such as the cactus ferruginous pygmy-owl). They are currently implementing a Tribal Wildlife Grant to establish baseline data on the occupancy and distribution of flora and fauna in the Baboquivari, Quinlan, and Coyote Mountains with the tribal boundary. They are also confirming known populations and identifying previously unknown populations of rare, threatened, or endangered species such as the Chiricahua leopard frog, Kearney's blue star, and Mexican spotted owl. Further, they are identifying species areas of unique biological importance for future monitoring, protection, and management efforts. They are establishing a model for future inventory protocols on the remainder of the tribal lands and are providing for the capability to continue such studies.

The Tohono O'odham Nation assists the Service in monitoring lesser long-nosed bats at a maternity roost on tribal lands, which is only one of three known maternity roosts. By adopting voluntary conservation measures, the Nation ensures that habitat protection measures are implemented. Further, the Nation is committed to working with the Service to ensure their management meets the Service's requirements of both the jaguar and its habitat. These efforts by the Nation demonstrate their past and ongoing cooperation with the Service, and their commitment to continue cooperation with the Service in the future. Further demonstration of the Nations commitment to cooperate with the Service is expressed in their Statement of Relationship (April 2013) to develop and promote communication and understanding to preserve tribal sovereignty and accomplish conservation of natural resources on the Nation's lands.

The benefit of exclusion is the continuance and strengthening of our ongoing and effective working partnership with the Tohono O'odham Nation to promote the conservation of listed species, including the jaguar and its habitat. We consider that conservation benefits, as described above, are being provided to the jaguar and its habitat through our cooperative working relationship with the Tohono O'odham Nation.

We have established a working relationship with the Tohono O'odham Nation through informal and formal meetings that offered information sharing and technical advice and assistance about the jaguar and recommended conservation measures for the species and its habitat. These proactive actions were conducted in accordance with Secretarial Order 3206, American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act (June 5, 1997); the relevant provision of the Departmental Manual of the Department of the Interior (512 DM 2); and Secretarial Order 3317, Department of Interior Policy on Consultation with Indian Tribes (December 1, 2011). During our communication with the Tohono O'odham Nation, we recognized and endorsed their fundamental right to provide for tribal resource management activities, including those relating to jaguar habitat.

The designation of critical habitat on these tribal lands would be expected to adversely impact our working relationship with the Tohono O'odham Nation. During our discussions with the Tohono O'odham Nation and through a letter received during our first public

comment period, we were informed that the designation of critical habitat on tribal land would be viewed as an intrusion on their sovereign ability to manage natural resources in accordance with their own policies, customs, and laws. The perceived future restrictions (whether realized or not) of a critical habitat designation could have a damaging effect to coordination efforts, possibly preventing actions that might maintain, improve, or restore habitat for the jaguar and other species. To this end, the Tohono O'odham Nation would prefer to work with us on a government-to-government basis. For these reasons, we believe that our working relationship with the Tohono O'odham Nation would be better maintained and more effective if they are excluded from the designation of critical habitat for the jaguar. The benefits of excluding this area from critical habitat will include the continued cooperation and development of data-sharing and management plans for this and other listed species. If this area is designated as critical habitat, the government-to-government relationship we have with the Tohono O'odham Nation will be damaged and this situation will affect the Service's opportunities to assist the Tohono O'odham Nation with technical reviews, voluntary consultations, and data sharing. We view such opportunities as a substantial benefit since we have developed a cooperative working relationship with the Tohono O'odham Nation for the mutual benefit of jaguar conservation and other endangered and threatened species.

In addition, there are other listed species and habitat on the Tohono O'odham Nation for which conservation efforts of the tribe are important. We believe that the tribe is willing to work cooperatively with us and others to benefit other listed species, but only if they view the relationship as mutually beneficial. Consequently, the development of future voluntary management actions for other listed species may be compromised if these tribal lands are designated as critical habitat for the jaguar. Thus, a benefit of excluding these lands would be future conservation efforts that would benefit other listed species.

#### (3) Benefits of Exclusion Outweigh the Benefits of Inclusion

The benefits of including the Tohono O'odham Nation in critical habitat are limited to the incremental benefits gained through the regulatory requirement to consult under section 7 and consideration of the need to avoid adverse modification of critical habitat, and educational awareness. However, as

discussed above, these benefits are minimal because they are provided for through other mechanisms, such as the Nation's commitment to jaguar conservation and the maintenance of effective collaboration and cooperation to promote the conservation of the jaguar and its habitat.

Alternatively, the benefits of excluding these areas from critical habitat for the jaguar are more significant and include the continued development and implementation of special management measures and coordination with the Service for the jaguar and other listed species on the Tohono O'odham Nation lands. As discussed above, the Service has established a cooperative conservation partnership with the Nation. Maintaining this relationship is important to the continued conservation of the jaguar, as well as several other listed species, that occur on the Nation's lands. Exclusion from critical habitat designation will allow the Tohono O'odham Nation to manage their natural resources to benefit the jaguar, without the perception of Federal Government intrusion because of the designation of critical habitat on their land. This philosophy is also consistent with our published policies on Native American natural resource management. The exclusion of this area will likely also provide additional benefits to the species that would not otherwise be available to encourage and maintain cooperative working relationships. Therefore, we find that the benefits of excluding this area from critical habitat designation outweigh the benefits of including this area. Furthermore, conservation of other species and their habitat provides conservation benefits for the environment as a whole, which is a benefit for the jaguar.

#### (4) Exclusion Will Not Result in Extinction

As noted above, the Secretary, under section 4(b)(2) of the Act, may exclude areas from the critical habitat designation unless it is determined, based on the best scientific and commercial data available, that the failure to designate such area as critical habitat will result in the extinction of the species concerned. Jaguars range from the southern United States to South America (Swank and Teer 1989, p. 14). Consequently, we have determined that exclusion of the Tohono O'odham Nation from the critical habitat designation will not result in the extinction of the jaguar.

### Summary of Comments and Recommendations

We requested written comments from the public on the proposed designation of critical habitat for the jaguar during three comment periods. The first comment period associated with the publication of the proposed rule opened on August 20, 2012, and closed on October 19, 2012 (August 20, 2012, 77 FR 50214). The second comment period associated with the proposed revision of critical habitat designation, as well as the associated draft economic analysis and draft environmental assessment, opened July 1, 2013, and closed on August 9, 2013, (July 1, 2013; 78 FR 39237). A third comment period from August 29, 2013, through September 13, 2013 (August 29, 2013, 78 FR 53390), was provided to the public for additional review and comment on the proposed revision of critical habitat designation, as well as the associated draft economic analysis and draft environmental assessment. We received several requests for a public hearing, which we held on July 30, 2013. We also contacted appropriate Federal, State, and local agencies; scientific organizations; and other interested parties and invited them to comment on the proposed rule and draft economic analysis and draft environmental assessment during these comment periods.

We received approximately 33,000 comment letters on this action through the end of the final comment period. All substantive information provided during comment periods has either been incorporated directly into this final designation or addressed below. Comments received were grouped into general issues specifically relating to the critical habitat designation for the jaguar and are addressed in the following summary and incorporated into the final rule as appropriate.

#### Peer Review

In accordance with our peer review policy published on July 1, 1994 (59 FR 34270), we solicited expert opinions from seven 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 six of the seven peer reviewers.

We reviewed all comments received from the peer reviewers for substantive issues and new information regarding critical habitat for the jaguar. Most of the peer reviewers (five of the six) generally concurred with our methods and conclusions and provided

additional information, clarifications, and suggestions to improve this final rule. One peer reviewer was against critical habitat designation for the jaguar, stating that there is no habitat in the United States at this time that is critical to the survival of the jaguar as a species. Peer reviewer comments are addressed in the following summary and incorporated into the final rule as appropriate.

#### Peer Reviewer Comments

(1) Comment: There is no habitat in the United States that is critical to the recovery of the jaguar or its survival as a species.

Our response: The Service has identified critical habitat for the jaguar in accordance with the Act and its implementing regulations. Section 4(a)(3)(A) of the Act states that critical habitat shall be designated for endangered and threatened species to the maximum extent prudent and determinable. Designation of critical habitat is not prudent when one or both of the following situations exist (50 CFR 424.12(a)(1)): identification of critical habitat can be expected to increase the degree of a threat or such designation would not be beneficial to the species.

On March 30, 2009, the United States District Court for the District of Arizona (Court) issued an opinion in *Center for Biological Diversity v. Kempthorne*, CV 07–372–TUC JMR (Lead) and *Defenders of Wildlife v. Hall*, CV08–335 TUC JMR (Consolidated) (D. Ariz., Mar. 30, 2009), that set aside the Service's previous not prudent determination and required the Service issue a new determination on whether designation is prudent, stating that Service regulations at <https://www.federalregister.gov/select-citation/2010/01/13/50-CFR-424.12> (b) require that the Service shall focus on the principal biological constituent elements within the defined area that are essential to the conservation of the species. The court did not order the Service to designate critical habitat, rather the court ordered the Service to reevaluate whether designation of critical habitat for the jaguar is prudent. Thus, in responding to the Court's order, we reevaluated our previous "not prudent" finding regarding critical habitat designation for the jaguar. Following a review of the best available information, including the ongoing conservation programs for the jaguar, and information and analysis that became available subsequent to the July 12, 2006, not prudent finding, we determined that the designation of critical habitat for the jaguar would be beneficial to the species. We also determined that designation of critical

habitat would not be expected to increase the degree of threat to the species. As such, we no longer find that designation of critical habitat for the jaguar is not prudent under our regulations, and, conversely, determine that designation is prudent. Therefore, we are required to designate critical habitat for the jaguar to fulfill our legal and statutory obligations. Based on the best scientific data available, the Service has determined that designation of critical habitat for the jaguar is prudent and determinable.

The first part of section 3(5)(A) of the Act defines critical habitat as areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical or biological features that are essential to the conservation of the species. Under the second part 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. As discussed in the Background section of the January 13, 2010, Notice of Determination (75 FR 1741), jaguars have been found in the United States in the past and may occur in the United States now or in the future. As such, physical and biological features that can be used by jaguars occur in the United States. We have determined that there are geographical areas in the United States that may have been occupied by the species at the time it was listed. The Service has determined that data are sufficient to determine the physical or biological feature and associated PCEs for jaguar critical habitat. We have determined that the essential physical or biological feature and the associated PCEs essential for jaguar conservation are present in the United States. Critical habitat in the United States contributes to recovery the jaguar's persistence and recovery across the species' entire range by providing small patches of habitat (perhaps in some cases with a few resident jaguars), and as areas for cyclic expansion and contraction of the nearest core area and breeding population in the proposed Northwestern Recovery Unit.

Section 4(b)(2) of the Act states that the Secretary shall designate critical habitat, and make revisions thereto, under subsection (a)(3) on the basis of the best scientific data available and after taking into consideration the economic impact, and any other relevant impact, of specifying any particular area as critical habitat. It is often the case that biological information may be lacking for rare species; however, the Service has used

the best available scientific data as required by the Act. We recognize that information currently available for northern jaguars is scant; therefore, we convened a binational Jaguar Recovery Team in 2010 to synthesize information on the jaguar, focusing on a area comprising jaguars in the northernmost portion of their range, the proposed Northwestern Recovery Unit. The Jaguar Recovery Team comprises members from the United States and Mexico, and is composed of two subgroups: a technical subgroup and an implementation subgroup. We have based jaguar critical habitat on information compiled and produced by the Jaguar Recovery Team, to the greatest extent possible. As described in the proposed rule and this final rule, to the greatest extent possible, we based critical habitat boundaries on the physical and biological feature and PCEs from the latest jaguar habitat model produced by the Jaguar Recovery Team (Sanderson and Fisher 2013, entire), which we consider the best commercial and scientific data available. The Jaguar Recovery Team comprises jaguar experts, large-cat experts, and stakeholders from the United States and Mexico; therefore, we consider that the work produced by the team is the best available scientific and commercial data and, subsequently, the best information to use in determining the physical or biological feature and associated PCEs of jaguar critical habitat. Using this information, we have determined that the physical or biological feature of jaguar critical habitat and the associated PCEs are present in the United States, and that these areas were occupied at the time of listing.

(2) Comment: Designation of critical habitat is not due to new data, but due to litigation. The Service's previous 1997 and 2006 not prudent determinations for designating critical habitat for the jaguar were valid decisions, but the 2010 prudent determination to designate critical habitat for the jaguar is not valid. The court did not order the Service to designate critical habitat, but rather to determine if the physical and biological features upon which jaguars depend could be found in the United States and, if so, were essential to the conservation of the species.

Our response: The Service has identified critical habitat for the jaguar in accordance with the Act and its implementing regulations. See our response to comment number 1 in the *Peer Reviewer Comments* above.

(3) Comment: The Service received multiple comments related to the

inclusion of areas north of the proposed critical habitat. Some thought areas north of the proposed critical habitat along the Mogollon Rim in Arizona, and to the north and east into the Gila highlands in New Mexico are where the best biophysical potential for jaguar recovery in the United States exists. Others thought jaguars would use habitat north of the proposed critical habitat, but thought the use and importance of these areas were lower given their distance from breeding populations.

Our response: Areas north of designated critical habitat may be usable by jaguars and may in fact contribute to the recovery of the species. However, these areas do not meet the definition of critical habitat under the Act because they were neither occupied at the time of listing nor are they considered essential to the conservation of the species. See *Areas Essential for the Conservation of Jaguars*, above.

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. However, we have determined that the critical habitat areas that we are designating in the United States are sufficient for the conservation of jaguars. We do not agree that areas in the United States outside of the proposed Northwestern Recovery Unit must be designated as critical habitat to recover the species, as the boundaries of the recovery unit were determined by the Jaguar Recovery Team. All designated areas contain all of the physical and biological features upon which jaguars in the United States depend, including connectivity to Mexico, which is a key component aiding the recovery of the species, or the designated areas are considered essential to the conservation of the jaguar.

(4) Comment: The Service should include designation of additional areas to support a viable, self-sustaining population of jaguars within the United States (of 50 to 100 individuals) in order to recover the species within the United States.

Our response: Creating a viable, self-sustaining population (of perhaps 50 to 100 jaguars) in the United States is not a recovery goal for the jaguar (Jaguar Recovery Team 2012, pp. 38–42). Recovery of the jaguar does not require that areas in the United States contain females, documented breeding, or a self-

sustaining population. As discussed in the proposed rule and this final rule, the purpose of designating critical habitat in the United States is to provide areas for transient jaguars (with possibly a few residents) to support the nearest breeding area to the south in Mexico, allowing this population to expand and contract, and, ultimately, recover. It is our intent that the designation of critical habitat will protect the functional integrity of the features essential for jaguar life-history requirements for this purpose into the future.

(5) Comment: The Service should expand critical habitat to represent all ecoregions and biotic communities from which jaguars in the United States have been extirpated, including portions of California, Texas, and possibly Louisiana.

Our response: Designating all the ecoregions and biotic communities in the United States from which jaguars have been extirpated as critical habitat does not meet the definition of critical habitat under the Act because they were neither occupied at the time of listing nor are they considered essential to the conservation of the species. To meet the requirements of the Act, the Service determined areas that were occupied by jaguars at the time of listing that contained the physical and biological features essential to the conservation of the jaguar and unoccupied areas that were essential to the conservation of the jaguar. Additionally, to the greatest extent possible, we based critical habitat unit boundaries on the physical and biological feature and PCEs from the latest jaguar habitat model produced by the Jaguar Recovery Team (Sanderson and Fisher 2013, entire), which is the best commercial and scientific data available. In areas where the critical habitat units did not provide connectivity to Mexico (PCE 1), we identified additional areas to provide this connectivity under the second part of the definition of critical habitat. See *Criteria Used To Identify Critical Habitat*, above. Further, section 3(5)(C) of the Act states that, except in those circumstances determined by the Secretary, critical habitat shall not include the entire geographical area which can be occupied by the threatened or endangered species.

(6) Comment: The lack of detection of jaguars does not indicate the species is absent.

Our response: The Service agrees that the lack of detection does not indicate the species is absent, and we acknowledge this in our proposed rule and this final rule. The Service recognizes that many mobile species are difficult to detect in the wild because of

morphological features (such as camouflaged appearance) or elusive behavioral characteristics (such as nocturnal activity) (Peterson and Bayley 2004, pp. 173, 175). This situation presents challenges in determining whether or not a particular area is occupied because we cannot be sure that a lack of detection indicates that the species is absent (Peterson and Bayley 2004, p. 173). However, the Service used the best available data pertaining to jaguar occurrences. See *Occupied Area at the Time of Listing*, above, in this final rule.

(7) Comment: The Service should follow the jaguar habitat modeling efforts of Hatten *et al.* (2005) and Robinson (2006) as a basis for including additional areas in these two states. Hatten *et al.* (2005) identified 21–30 percent of Arizona (approximately 62,000–88,600 km<sup>2</sup> (23,938–34,209 mi<sup>2</sup>)) as potential jaguar habitat and Robinson (2006) identified approximately half of New Mexico (approximately 156,800 km<sup>2</sup> (60,541 mi<sup>2</sup>)) as potential jaguar habitat.

Our response: Designating all areas of potential habitat in the United States as critical habitat does not meet the definition of critical habitat under the Act because they were neither occupied at the time of listing nor are they considered essential to the conservation of the species. We recognize that the area of potential habitat is larger than what we have designated as critical habitat, but as required under the Act, we have designated those areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical or biological features that are essential to the conservation of the species; or 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. We also 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.

In the Jaguar Recovery Team's analysis and modeling effort, the team considered the modeling efforts of Hatten *et al.* (2005, entire) and Robinson (2006, entire) and further refined the Hatten *et al.* (2005) model such that a similar model could be applied across the entire Northwestern Recovery Unit. The Jaguar Recovery Team provided this

analysis and habitat model in their 2013 report entitled Jaguar Habitat Modeling and Database Update (Sanderson and Fisher 2013, entire). We based critical habitat boundaries on the physical or biological feature and PCEs from the updated habitat modeling report, in which the habitat features preferred by the jaguar in the proposed Northwestern Recovery Unit were described based on the best available science and expert opinion of the Jaguar Recovery Team.

(8) Comment: The Service should expand critical habitat to ensure habitat connectivity. The Service should include linkages between all of the critical habitat units.

Our response: We recognize that connecting critical habitat units in the United States is important to achieve connectivity between the United States and Mexico. We have identified connectivity between expansive open spaces in the United States and Mexico as an essential component of the physical or biological feature essential for the conservation of the jaguar in the United States, and we understand that connectivity between expansive open areas of habitat for the jaguar in the United States is necessary if viable habitat for the jaguar is to be maintained. We acknowledge that, based on home range sizes and research and monitoring, jaguars will use valley bottoms (for example, McCain and Childs 2008, p. 7) and other areas of habitat connectivity to move among areas of higher quality habitat found in isolated mountain ranges in the United States. Therefore, in areas where critical habitat was designated based on the first part of the definition of critical habitat (areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical or biological features that are essential to the conservation of the species) in which connectivity to Mexico (PCE 1) was not provided through a direct connection to Mexico, we identified areas under the second part of critical habitat (defined in the Act as the 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) to provide this connectivity. We did this by selecting and adding subunits containing low human influence and impact, and either or both vegetative cover or rugged terrain. See *Connectivity between expansive open spaces in the United States and Mexico*, above, in this final rule.

In response to the need to include linkages between all of the critical habitat units within the United States,

we determined that no additional areas within the United States must be designated to connect critical habitat units together. As described in the final rule, there is only one occurrence record of a jaguar in a valley between mountain ranges. With only one record, we are unable to describe the features of these areas because of a lack of information. Therefore, while we acknowledge that habitat connectivity within the United States is important, the best available scientific and commercial information does not allow us to determine that any particular area within the valleys is essential, and all of the valley habitat is not essential to the conservation of the species. Therefore, we are not designating any areas within the valleys between the montane habitat as critical habitat. See *Connectivity between expansive open spaces within the United States*, above, in this final rule.

(9) Comment: The Service should include all Class II observations and suspect Class I observations. The Service should include all historic records. The Service is dismissing the current and former U.S. jaguar range. The Service appears to be trying to introduce balance in the treatment of false negative and positive biases in time. However, the more value-neutral approach would be to use both Class I and Class II records.

Our response: The Service considers undisputed Class I records as the best available scientific data to determine occupancy. To meet the requirements of section 3(5)(A)(i) of the Act and its implementing regulations, we are required to define the specific areas within the geographical area occupied by the species at the time it is listed. Determining jaguar occupancy at the time of listing is particularly difficult because jaguars were added to the list many years ago, the species was rare within the United States, and jaguars are, by nature, cryptic and difficult to detect, so defining an area as occupied or unoccupied must be done based on limited information. Class I records are those for which some sort of physical evidence is provided for verification (such as a skin, skull, or photograph); they are considered “verified” or “highly probable” as evidence for a jaguar occurrence. We determined that undisputed Class I observations from 1962 through September 11, 2013, provided the best scientific and commercial data available, as these are the most reliable and verifiable records for jaguars. Suspect (validity of these locations is questionable) Class I observations, Class II observations, and other historical records represent observations that may have been

influenced in some way or that may not, in fact, be a sighting of a jaguar. For these reasons, we determined that undisputed Class I jaguar records are the most reliable; therefore, we used these records to determine critical habitat occupancy. See *Occupied Area at the Time of Listing*, above, in this final rule.

(10) Comment: It is possible that jaguars were not present at the time of listing; however, the absence of jaguars was most certainly the result of human killing of jaguars, and jaguars almost certainly occupied and reproduced in southern Arizona in the late 19th and early 20th century, shortly prior to listing.

Our response: Jaguars were present at the time of listing as well as historically in the United States. Based on the best available information related to jaguar rarity, biology, and survey effort, we determine that areas containing undisputed Class I records from 1962 to the present (September 11, 2013) may have been occupied by jaguars at the time of listing. Our rationale for including these records is based on expert opinion regarding the average lifespan of the jaguar, the consensus being 10 years. It is likely that areas in which jaguar sightings have occurred after 1982 were occupied at the time of the original listing, but jaguars had not been detected because of their rarity, the difficulty in detecting them, and a lack of surveys for the species.

To the extent that uncertainty exists regarding our analysis of these occurrence data, we acknowledge there is an alternative explanation as to whether or not these areas were occupied at the time the jaguar was listed in 1972 (37 FR 6476). The lack of jaguar sightings at that time, as well as some expert opinions cited in our July 22, 1997, clarifying rule (62 FR 39147) (for example, Swank and Teer 1989), suggest that jaguars in the United States had declined to such an extent by that point as to be effectively eliminated. Therefore, an argument could be made that no areas in the United States were occupied by the species at the time it was listed, or that only areas containing undisputed Class I records from between 1962 and 1982 were occupied.

For this reason we also analyzed whether or not critical habitat areas are essential to the conservation of the species. Through our analysis, we determined that they are essential to the conservation of the species because: (1) They have demonstrated recent (since 1996) occupancy by jaguars; (2) they contain features that comprise jaguar habitat; and (3) they contribute to the species' persistence in the United States by allowing the normal demographic

function and possible range expansion of the Northwestern Recovery Unit, which is essential to the conservation of the species (as discussed in the *Jaguar Recovery Planning in Relation to Critical Habitat* section). Therefore, whether or not they were occupied at the time of listing, we are designating them as critical habitat.

(11) Comment: The Service's description of occupancy is not consistent with the Act; no data from 1962 onward indicate any breeding or resident populations of jaguars within the United States, as originally stated in the 1972 rule.

Our response: The Act does not require an area to have a resident population, documented breeding, or females in order to be considered occupied. Rather, section 3(5)(A) of the Act defines the first part of critical habitat as the specific areas within the geographical area 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. The Service has determined that physical and biological features that are essential to the conservation of the jaguar occur in the United States. Further, in *Arizona Cattle Grower's Assoc. v. Salazar*, 2009 U.S. App. Lexis 29107 (June 4, 2010), the Ninth Circuit affirmed that the Service has the authority to designate as occupied all areas used by a listed species with sufficient regularity that members of the species are likely to be present during any reasonable span of time. Therefore, occupancy of an area can be indicated by the presence of an individual member of the species, and we have determined that areas may have been occupied at the time of listing based on this definition in conjunction with observations of jaguars in those areas (as described in Table 1 of this final rule).

Further, the purpose of critical habitat for the jaguar in the United States is to contribute to the species' persistence and, therefore, overall conservation by providing areas to support some individuals during dispersal movements, by providing small patches of habitat (perhaps in some cases with a few resident jaguars), and as areas for cyclic expansion and contraction of the nearest core area and breeding population in the Northwestern Recovery Unit. Through our analysis, we determined there are areas within the United States containing the physical or biological feature and associated PCEs of jaguar critical habitat to support this function, including adequate food, water, shelter, and space. Therefore, we are designating these

areas of critical habitat for the purposes stated above.

(12) Comment: Jaguars do not remain in the United States, nor are they found in abundance in the United States, because areas in the United States provide suboptimal conditions in terms of food and reproduction.

Our response: The purpose of critical habitat for the jaguar in the United States is to contribute to the species' persistence and, therefore, overall conservation by providing areas to support some individuals during dispersal movements, by providing small patches of habitat (perhaps in some cases with a few resident jaguars), and as areas for cyclic expansion and contraction of the nearest core area and breeding population in the Northwestern Recovery Unit. Through our analysis, we determined there are areas within the United States containing the physical or biological feature and associated PCEs of jaguar critical habitat to support this function, including adequate food, water, shelter, and space. Therefore, we are designating these areas of critical habitat for the purposes stated above.

(13) Comment: The central goal statement offered by the proposed rule is to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. The totality of what is necessary in terms of space, quality, or numbers needed to attain viability is not specified anywhere in the proposed rule. The closest approximation is statements to the effect that some amount (not specified) of essential habitat is needed to achieve recovery goals for jaguars in the United States, with the remaining focus on defining essential jaguar habitat, which is not a recovery goal.

Our response: The designation of critical habitat is only one component of recovery for a species. The recovery plan is the appropriate instrument to define recovery goals. The Service is in the process of developing a recovery plan.

(14) Comment: The Service assumes that optimal habitat for jaguars in the United States would be the high mountains or rugged areas, because this is where the most sightings have been reported. However, jaguar prey prefers lowland areas and are only relegated to more rugged regions when the lowland areas have been taken over or destroyed.

Our response: Biological information is often lacking for rare species, particularly with a cryptic species like the jaguar that is difficult to detect. However, the Act requires the Service to make determinations based on the best

scientific and commercial data available. The Jaguar Recovery Team produced a habitat model based on the best information available, which indicates that habitat for jaguars in the United States is in rugged, mountainous areas. Therefore, we have utilized this information to inform this designation.

(15) Comment: Areas in the United States will function primarily to support dispersing or transient jaguars, although breeding could have occurred in the past.

Our response: The Service agrees that critical habitat in the United States will function primarily to support dispersing or transient jaguars. Jaguars may have bred in the United States in the past (see Table 1 in Brown and López González 2001, pp. 6–9), but breeding has not been documented recently. As described in the proposed rule and this final rule, the recovery function and value of critical habitat for the jaguar within the United States is to contribute to the species' persistence and, therefore, overall conservation by providing areas to support some individuals during dispersal movements, by providing small patches of habitat (perhaps in some cases with a few resident jaguars), and as areas for cyclic expansion and contraction of the nearest core area and breeding population in the Northwestern Recovery Unit.

(16) Comment: The Service received several comments related to the use of the best available scientific data. Some noted that the Service has used the best available literature and data, and acknowledged that there is a lack of data on jaguar habitat in this region; however, additional data would not result in a significantly different or better map of critical habitat. Conversely, others asserted that the Service did not use the best available scientific data and data is lacking to justify the designation of critical habitat. Others also asserted that the proposed rule continually uses assumptions and speculation as fact.

Our response: In accordance with section 4 of the Act, we are required to designate critical habitat on the basis of the best scientific data available. Further, our Policy on Information Standards under the 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 ([www.fws.gov/informationquality/](http://www.fws.gov/informationquality/)), provide criteria and guidance, and establish procedures 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.

Primary or original information sources are those that are closest to the subject being studied, as opposed to those that cite, comment on, or build upon primary sources. The Act and our regulations do not require us to use only peer-reviewed literature, but instead they require us to use the “best scientific and commercial data available” in a critical habitat designation. We use information from many different sources, including articles in peer-reviewed journals, scientific status surveys and studies completed by qualified individuals, Master’s thesis research that has been reviewed but not published in a journal, other unpublished governmental and nongovernmental reports, reports prepared by industry, personal communication about management or other relevant topics, conservation plans developed by States and counties, biological assessments, other unpublished materials, experts’ opinions or personal knowledge, and other sources. We have relied on published articles, unpublished research, habitat modeling reports, digital data publicly available on the Internet, and the expert opinion of the Jaguar Recovery Team to designate critical habitat for the jaguar.

Also, in accordance with our peer review policy published on July 1, 1994 (59 FR 34270), we solicited peer review from knowledgeable individuals with scientific expertise that included familiarity with the species, the geographic region in which the species occurs, and conservation biology principles. Additionally, we requested comments or information from other concerned governmental agencies, Native American Tribes, the scientific community, industry, and any other interested parties concerning the proposed rule. Comments and information we received helped inform this final rule. Further, information provided in comments on the proposed designations and the draft environmental and economic analyses were evaluated and taken into consideration in the development of these final designations, as appropriate.

Information currently available for northern jaguars is scant; therefore, we convened a binational Jaguar Recovery Team in 2010 to synthesize information on the jaguar, focusing on an area comprising jaguars in the northernmost

portion of their range, the proposed Northwestern Recovery Unit. The Jaguar Recovery Team comprises members from the United States and Mexico, and is composed of two subgroups: A technical subgroup and an implementation subgroup. The technical subgroup consists of feline ecologists, conservation biologists, and other experts, who advise the Jaguar Recovery Team and the Service on appropriate short- and long-term actions necessary to recover the jaguar. The implementation subgroup consists of landowners and land and wildlife managers from Federal, State, tribal, and private entities, who advise the technical subgroup and the Service on ways to achieve timely recovery with minimal social and economic impacts or costs.

As stated above and in the proposed rule, we have based jaguar critical habitat on information compiled and produced by the Jaguar Recovery Team, to the greatest extent possible. We consider that the work produced by the Jaguar Recovery Team is the best available scientific and commercial data, and that following the team’s recommendations is the best avenue for achieving conservation of the species and, by extension, designating critical habitat. We acknowledge that the scientific information regarding the jaguar has limitations and that some of our citations are not specific to these species or geographic area. Nevertheless, the citations offer evidence in basic biological responses for similar species, and we would expect a similar response with the jaguar. Consequently, the Service has used the best available scientific information to support our decision.

(17) Comment: The Service’s process of designating critical habitat is logical, consistent, and reasonable, and the data used were carefully evaluated and based on sound ecological principles. The use of the model to identify areas with features important to the jaguar habitat allows areas to be evaluated that have not been surveyed, but have high potential to provide habitat for jaguars. Relying solely on surveys or anecdotes will almost always yield a flawed product because surveys never cover all areas of potential interest, are imperfect for elusive animals that are challenging to detect, and, for species whose populations are thought to be suppressed, there are almost certainly areas on the landscape that can function as habitat, but that are unoccupied because of reduced population levels.

Our response: We agree. In our proposed rule and this final rule, we used the best available scientific

information to support our decision. Data reviewed by the Secretary may include, but are not limited to scientific or commercial publications, administrative reports, maps or other graphic materials, information received from experts on the subject, and comments from interested parties. We have based jaguar critical habitat on information compiled and produced by the Jaguar Recovery Team, to the greatest extent possible. We consider the work produced by the Jaguar Recovery Team as the best available scientific and commercial data, and that following the team’s recommendations is the best avenue for achieving conservation of the species and, by extension, designating critical habitat. The PCEs are based on the latest jaguar habitat model produced by the Jaguar Recovery Team (Sanderson and Fisher 2013, entire), which is the best commercial and scientific data available. Consequently, the Service has used the best available scientific information to support our decision.

(18) Comment: The Service should have considered the population viability analysis (PVA) model in their decision process. The population viability and, related, minimum viable populations, received only passing reference in the proposed rule and with no articulated justification. The PVA concept is central to the notion of recovery in that it informs population targets, which in turn inform habitat targets (the focus of this decision process).

Our response: During the development of the Recovery Outline and as a part of the recovery planning process, the Jaguar Recovery Team worked with the Wildlife Conservation Society to create a jaguar habitat model (Sanderson and Fisher 2011, pp. 1–11; 2013, entire), and the Conservation Breeding Specialist Group of the Species Survival Commission/International Union for Conservation of Nature to conduct a PVA and population habitat viability analysis (PHVA) for the jaguar. We anticipated that these analyses would assist us in determining those recovery actions that would be most effective for achieving a viable jaguar population for the Northwestern Recovery Unit (not the United States), as well as provide information relevant to determining critical habitat for the jaguar. However, the PHVA analysis and PVA themselves, while informative for recovery-planning purposes, did not contribute to the determination of critical habitat. Critical habitat for the jaguar focuses on the physical or biological features available in the United States that are essential to the conservation of the species; it is not

based on an overall number of jaguars, nor is it required to be, whereas the PVA and PHVA are used to determine a minimum viable population. The purpose of critical habitat for the jaguar is to provide areas to support some individuals during dispersal movements, by providing small patches of habitat (perhaps in some cases with a few resident jaguars), and as areas for cyclic expansion and contraction of the nearest core area and breeding population in the Northwestern Recovery Unit, which contributes to the overall recovery of the jaguar. Therefore, the Service relied on habitat features as described in the preliminary report entitled Digital Mapping in Support of Recovery Planning for the Northern Jaguar (Sanderson and Fisher 2011, pp. 1–11) for our August 20, 2012, proposed rule (77 FR 50214), and a later report entitled Jaguar Habitat Modeling and Database Update (Sanderson and Fisher 2013, entire) for our July 1, 2013, revised proposed rule (78 FR 39237) and this final rule. Please see the *Criteria Used to Identify Critical Habitat* section of the final rule and our response to comment number 1 in *Peer Reviewer Comments* above for further information about how we incorporated these reports into our determination.

(19) Comment: The Service should consider mountain lion (puma) literature where the data and research on jaguars is scant. Mountain lions, like jaguars, have an exceptionally large range that spans many degrees of latitude and longitude with different habitat types and are hypercarnivorous felid ambush predators that exhibit substantial diversity of diet and specific habitat relations, depending on the environment. The Service has the inherent authority and ability to use the best available science regarding connectivity for other similar species, such as the mountain lion, to make a reasoned judgment about the most likely areas that would facilitate connectivity for the jaguar. Consideration of mountain lions also argues against giving credence to Rabinowitz (1999) and Swank and Teer (1989).

Our response: The Service recognizes the overlap in the ecology of mountain lions and jaguars; however, we have based jaguar critical habitat on information compiled and produced by the Jaguar Recovery Team to the greatest extent possible. The Jaguar Recovery Team comprises jaguar experts, large-cat experts (knowledgeable about mountain lions), and stakeholders from the United States and Mexico; therefore, we consider that the work produced by the team is the best available scientific and commercial data, and that following the

team's recommendations is the best avenue to designating critical habitat and conservation of the species.

(20) Comment: We received multiple comments concerning the characterization of prey abundance. Some noted that the Service should include actual estimates of prey density in the analysis so as to meet the best available data standard and to be consistent with treatment of other habitat factors. Others stated that it is impossible to characterize prey abundance in any temporally and spatially meaningful way. Rather, the relative permanent physical and ecological features that are important to jaguars and their prey (e.g., vegetation structure and composition, proximity to water, topography) are more useful for characterizing habitat.

Our response: We have relied on the best available scientific information on prey that is readily available from the Arizona Game and Fish Department (Hunt Arizona 2012 Edition, available at: <http://www.azgfd.gov/regs/HuntArizona2012.pdf>) and the New Mexico Department of Game and Fish (Harvest Information, available at: <http://www.wildlife.state.nm.us/recreation/hunting/>). Using this information, we have determined that white-tailed deer and javelina (the preferred prey of the jaguar in the northwestern-most part of its range) have been present in each critical habitat unit for at least 50 years in Arizona, and have been successfully hunted in each hunt unit overlapping jaguar critical habitat for the same period of time (Game Management Units 30A, 34A, 34B, 35A, 35B, 36A, 36B, and 36C). This information indicates that adequate levels of prey are currently available in critical habitat units in Arizona, and have been available for at least 50 years in these units.

Historical harvest information from New Mexico is not as readily available. However, based on the most recent harvest information, white-tailed deer and javelina are available in Unit 5 of jaguar critical habitat (Game Management Unit 27). White-tailed and mule deer and javelina are likely available in Unit 6 of jaguar critical habitat (Game Management Unit 26). We can determine that javelina have been successfully harvested in this Unit 6 (Game Management Unit 26), but this particular Game Management Unit lumps all deer together, so we are unable to distinguish hunt success between mule deer and white-tailed deer. This information indicates that adequate levels of prey are currently available in critical habitat units located in New Mexico.

(21) Comment: There has been no detailed prey occurrence or density study cited for the areas under consideration despite recognition that adequate prey is a major factor in assessing critical habitat.

Our response: See our response to comment number 20 in *Peer Reviewer Comments* above.

(22) Comment: The Service should consider that jaguar observations would likely be biased towards areas where there was more human activity together with greater visibility, specifically: nearer water sources, in less rugged areas, in areas with less forest or shrub cover, in areas with better access, and in areas with more human residences. This is not intrinsically problematic, but this precautionary bias should be recognized and explained.

Our response: We acknowledge that certain types of bias could be evident in jaguar observations due to their cryptic, nocturnal, and predatory nature. However, based on section 4(b)(1)(A) of the Act, the Secretary is required to make determinations on the basis of the best scientific and commercial data available.

(23) Comment: The Service should understand that just because under-use of habitat near human facilities has been demonstrated, it does not mean that individual animals will not use areas near people as a result of or in the process of losing their fear. As long as jaguars are not harassed or killed at a high rate around human facilities, there is a high likelihood that jaguars could heavily use otherwise suitable habitats near people, in areas where the HII is greater than 20.

Our response: We recognize that male jaguars have been documented near roads, but the data do not indicate that this is where the majority of jaguar sightings occur. Further, based on section 4(b)(1)(A) of the Act, the Secretary is required to make determinations on the basis of the best scientific and commercial data available. We have determined that the best scientific data available is that which has been compiled and produced by the Jaguar Recovery Team. Therefore, while we acknowledge that some jaguars may be able to use areas of a higher HII, for the purposes of critical habitat we are using the range of values recommended by the Jaguar Recovery Team in the northern portion of the proposed Northwestern Recovery Unit.

(24) Comment: The Service received multiple comments regarding the use of different habitat models for designating critical habitat corridors. Some recommended using specific models such as Beier *et al.* (2006) and

Rabinowitz and Zeller (2010). Others recommended using Pima County Wildlife Connectivity Assessment and Arizona's Wildlife Linkages Assessment. One recommended using a thesis by M. Rudy. Others recommended using features on the landscape such as rivers, streams, draws, washes, and wetlands. Others recommended using mountain lion data or other corridor data regarding corridor width.

Our response: In response to the various models recommended, we understand there are different approaches to modeling jaguar habitat than the method we used, each involving different methodologies, assumptions, and data layers. However, we believe that the information collected by the Jaguar Recovery Team and the latest habitat model the team produced (Sanderson and Fisher 2013, entire) is the best available scientific data, and is appropriate to inform critical habitat for the jaguar. Their methodology closely follows another jaguar habitat mapping effort conducted by Hatten *et al.* (2005, entire), and essentially involves determining the habitat features most relied upon by jaguars in the northwestern-most part of the species' range by overlaying spatial data layers representing these habitat features with observations of jaguars within this range (see the *Criteria Used to Identify Critical Habitat* section of the final rule for more detailed information). Additionally, by following the Sanderson and Fisher (2013) methodology, final critical habitat works alongside and supports the recovery-planning process in that the information used for both processes is compatible.

(25) Comment: The Service should connect critical habitat units in the United States because sufficient connectivity between critical habitat units within the United States is needed.

Our response: See our response to comment number 8 in *Peer Review Comments* above.

(26) Comment: The Service should connect critical habitat units in the United States because connectivity is needed to facilitate dispersal events, adaptation to changing environmental conditions, and genetic exchange.

Our response: As described in the final rule, the purpose of critical habitat is to provide areas to support some individuals during dispersal movements, by providing small patches of habitat (perhaps in some cases with a few resident jaguars), and as areas for cyclic expansion and contraction of the nearest core area and breeding population in Mexico. We have

determined that the designated areas are adequate for these purposes.

(27) Comment: The Service should connect critical habitat units in the United States because connectivity is needed to mitigate for border-related activities that may sever connectivity to Mexico.

Our response: All projects with a Federal nexus proposed within jaguar critical habitat in the United States will be evaluated on a case-by-case basis with respect to section 7 of the Act to ensure they do not destroy or adversely modify designated areas. Please see our response to comment number 8 *Peer Review Comments* above regarding connectivity of critical habitat.

(28) Comment: The Service should connect critical habitat units in the United States because connectivity is needed to support 50 to 100 jaguars in Arizona and New Mexico.

Our response: Please see our response to comment number 4 *Peer Review Comments* above.

(29) Comment: The Service has not explained the placement of Subunits 4b and 4c. In particular, the placement of 4b is not supported by the best scientific data, and the Service has not justified including this subunit and does not provide empirical data (data acquired by means of observation or experimentation).

Our response: Subunits 4b and 4c do not contain all of the PCEs, nor are they required to, as these subunits are considered unoccupied. Section 3 of the Act requires that the Service designate critical habitat in 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. Subunits 4b and 4c contain a combination of low human influence and either or both canopy cover and ruggedness such that they represent areas through which a jaguar may travel between the United States and Mexico. These critical habitat subunits provide connectivity between critical habitat units within the United States, and they provide connectivity between the United States and Mexico.

(30) Comment: The Service should include the least-cost corridor modeled by Rosemont Mine to replace Subunit 4b, as well as the elimination of Subunit 4b altogether because Subunit 4c provides a more direct route to Mexico from Subunit 4a.

Our response: In determining the most likely areas that would connect Subunit 4a to Mexico (by connecting to Unit 3), we again relied on data provided by the Jaguar Recovery Team, which we consider the best available

scientific data. These subunits contain a combination of low human influence and either or both canopy cover and ruggedness such that they represent areas through which a jaguar may travel between Subunit 4a and Mexico. Either Subunit 4b or 4c may be used by a jaguar based on these habitat characteristics; therefore, we have no reason not to include these areas as critical habitat, regardless of which one provides a more direct connection to Mexico, as both subunits provide connectivity to Mexico through Unit 3.

(31) Comment: Future human impacts within Subunit 4c will render that subunit nonviable.

Our response: We understand that additional human impacts from future development on private or State lands could occur. However, critical habitat does afford protection to the jaguar through section 7 consultation under 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. 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 role for the species. Therefore, actions that are funded, permitted, or carried out by a Federal agency within jaguar critical habitat will continue to be evaluated to determine their impacts on critical habitat.

(32) Comment: The single observation of a jaguar along the Santa Cruz River contains considerable information of relevance to identifying corridors, especially if framed in terms of prior knowledge of jaguar ecology elsewhere.

Our response: Please see our response to comment number 8 *Peer Review Comments* above regarding connectivity of critical habitat.

(33) Comment: The Service should consider that numerous scientific publications (some cited by the proposed rule) make the case for foreseeable warming and drying of the regions in question; which is to say that the hypotheses (models of the world) tacitly adopted by the proposed rule are not defensible in light of the best available scientific information. Additional numerous publications describe not only projected geospatial patterns of warming and drying based on regional general circulation models, but also projected geospatial changes in vegetation and plant species distributions for biomes and species that

contribute directly to the proposed rule's definition of essential jaguar habitat. It is plausible that portions of the United States could become crucial to persistence of jaguars due to climate change.

Our response: The Service considered numerous scientific information sources as cited in our proposed rule and this final rule. The Service recognizes that some species are shifting their geographic ranges, often moving poleward or upwards in elevation (National Fish, Wildlife, and Plants 2012, p. 10). Range shifts are not always negative: habitat loss in one area may be offset by an increase elsewhere such that if a species is able to disperse, it may face little long-term risk. However, it is clear that shifting distributions can lead to a number of new challenges (National Fish, Wildlife, and Plants 2012, p. 26). Changes in climate can have a variety of direct and indirect ecological impacts on species, and can exacerbate the effects of other threats. Climate-associated environmental changes to the landscape, such as decreased stream flows, increased water temperatures, reduced snowpack, and increased fire frequency, can affect species and their habitats. The vulnerability of a species to climate change impacts is a function of the species' sensitivity to those changes, its exposure to those changes, and its capacity to adapt to those changes. The Service acknowledges in the proposed rule and this final rule that climate change has the potential to adversely affect the jaguar within the next 50 to 100 years (Jaguar Recovery Team 2012, p. 32). However, the degree to which climate change will affect jaguar habitat in the United States is uncertain. Further, we do not know whether the changes that have already occurred have affected jaguar populations or distribution, nor can we predict how the species will adapt to or be affected by the type and degree of climate changes forecast. Consequently, because the specific impacts of climate change on jaguar habitats remains uncertain at this time, we did not recommend any areas be designated as critical habitat specifically to account for the negative effects of climate change.

(34) Comment: Clarify the exclusion of manmade features, specifically if a road runs through a wilderness area, would this entire area be excluded from critical habitat or just the road?

Our response: A road through a wilderness area would be excluded from critical habitat because it does not contain the physical or biological features essential to the jaguar's conservation. Critical habitat does not

include manmade structures (such as buildings, aqueducts, runways, roads, and other paved areas), and the land on which they are located, existing within the legal boundaries on the effective date of this rule. However, the presence of a road does not exclude an area of 100 km<sup>2</sup> that contains all the PCEs from being designated as critical habitat. Areas in which the HII calculated over 1 km<sup>2</sup> (0.4 mi<sup>2</sup>) is 20 or less are considered an essential component of the physical or biological feature essential for the conservation of the jaguar in the United States.

(35) Comment: Clarify what expansive open space is.

Our response: Expansive open spaces in the southwestern United States is defined as areas of at least 100 km<sup>2</sup> (32 to 38.6 mi<sup>2</sup>) in size which: (1) Provide connectivity to Mexico; (2) contain adequate levels of native prey species, including deer and javelina, as well as medium-sized prey such as coatis, skunks, raccoons, or jackrabbits; (3) include surface water sources available within 20 km (12.4 mi) of each other; (4) contain from greater than 1 to 50 percent canopy cover within Madrean evergreen woodland, generally recognized by a mixture of oak (*Quercus* spp.), juniper (*Juniperus* spp.), and pine (*Pinus* spp.) trees on the landscape, or semidesert grassland vegetation communities, usually characterized by *Pleuraphis mutica* (tobosagrass) or *Bouteloua eriopoda* (black grama) along with other grasses; (5) are characterized by intermediately, moderately, or highly rugged terrain; (6) are below 2,000 m (6,562 feet) in elevation; and (7) are characterized by minimal to no human population density, no major roads, or no stable nighttime lighting over any 1-km<sup>2</sup> (0.4-mi<sup>2</sup>) area.

(36) Comment: Clarify habitat-related terminology (i.e., habitat, suitable habitat, high-quality habitat, essential habitat, and critical habitat), especially the relations of one term to another, and maintain its use throughout.

Our response: The terms suitable habitat, high-quality habitat, and essential habitat are not used in the final rule. Critical habitat is defined within the proposed rule and this final rule.

#### Comments From States

(37) Comment: There is no habitat in the United States that is critical to the recovery of the jaguar or its survival as a species.

Our response: See our response to comment number 1 in *Peer Reviewer Comments* above.

(38) Comment: Jaguar critical habitat in the United States is not essential because jaguars have persisted in the

Northern Recovery Unit for the last 50 years with no evidence of breeding in the United States during that time.

Our response: Evidence of breeding is not required for an area to be designated as critical habitat. See our response to comment number 11 in *Peer Reviewer Comments* above.

(39) Comment: Designation of critical habitat is not due to new data but due to litigation. The Service's previous 1997 and 2006 not-prudent determinations for designating critical habitat for the jaguar were valid decisions, but the 2010 prudent determination to designate critical habitat for the jaguar is not valid. The court did not order the Service to designate critical habitat, but rather to determine if the physical and biological features upon which jaguars depend could be found in the United States and, if so, were essential to the conservation of the species.

Our response: The Service has identified critical habitat for the jaguar in accordance with the Act and its implementing regulations. The Service has determined that designation of critical habitat for the jaguar is prudent and determinable based on the best scientific data available. Section 4(a)(3)(A) of the Act states that critical habitat shall be designated for endangered and threatened species to the maximum extent prudent and determinable. Therefore, we are required to designate critical habitat for the jaguar to fulfill our legal and statutory obligations. See our responses to comment numbers 1 and 2 in *Peer Review Comments* above.

(40) Comment: There are no physical or biological features to support jaguars, and, therefore, there is no jaguar habitat in New Mexico.

Our response: We have determined that the physical or biological feature for jaguar critical habitat and the associated PCEs are present in the United States, including New Mexico. To the greatest extent possible, we have based jaguar critical habitat on information compiled and produced by the Jaguar Recovery Team. The Jaguar Recovery Team comprises jaguar experts, large-cat experts, and stakeholders from the United States and Mexico; therefore, we consider that the work produced by the team is the best available scientific and commercial data, and that following the team's recommendations is the best avenue to designating critical habitat and conservation of the species.

(41) Comment: Habitat in New Mexico and Arizona is marginal for the jaguar; therefore, it is not essential.

Our response: Section 3(5)(A) of the Act defines critical habitat as the

specific areas within the geographical area 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. As described in the final rule, the recovery function and value of critical habitat for the jaguar within the United States is to contribute to the species' persistence and, therefore, overall conservation by providing areas to support some individuals during dispersal movements, by providing small patches of habitat (perhaps in some cases with a few resident jaguars), and as areas for cyclic expansion and contraction of the nearest core area and breeding population in the Northwestern Recovery Unit. The Northwestern Recovery Unit is essential for the conservation of the species; therefore, areas within New Mexico containing the physical and biological feature and associated PCEs are essential to the jaguar.

(42) Comment: The Service did not use the correct listing time period to determine occupancy. The commenter is concerned that the Service used data from 1982 to the present.

Our response: The Service's designation of occupied critical habitat is in compliance with the Act. Determining jaguar occupancy at the time of listing is particularly difficult given that: (1) Jaguars were rare on the landscape in the United States at the time of listing, making those individuals that may have been present more difficult to detect; (2) jaguars require expansive open spaces for each individual, thus reducing the likelihood of detecting them; (3) jaguars are highly mobile and inhabit rugged, remote areas, thus we cannot be sure that a lack of detection indicates that the species is absent; and (4) no effort was made to detect jaguars in the United States from 1972 to 1997. As discussed in the proposed rule and this final rule, our intention was to list the species throughout its entire range at the time it was added to the Endangered Species Conservation Act in 1972; therefore, we determine that 1972 is the date the species was listed. We are including areas in which reports of jaguar exist during the 10 years prior to its listing as occupied at the time of listing, meaning we are considering records back to 1962. Our rationale for including these records is based on expert opinion regarding the average lifespan of the jaguar, the consensus being 10 years. Therefore, we assume that areas that would have been considered occupied at the time of listing would have included sightings 10 years prior to its listing, as presumably these areas were

still inhabited by jaguars when the species was listed in 1972. Based on the best available information related to jaguar rarity, biology, and survey effort, we determine that areas containing undisputed Class I records from 1962 (10 years prior to listing, which is the average lifespan of a jaguar) to the present (September 11, 2013) may have been occupied by jaguars at the time of listing.

The second part of the Act's definition of critical habitat is defined as specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination by the Secretary that such areas are essential for the conservation of the species. For these reasons, we also analyzed whether or not critical habitat areas are essential to the conservation of the species. To the extent that uncertainty exists regarding our analysis of these data, we acknowledge there is an alternative explanation as to whether or not these areas were occupied at the time the jaguar was listed in 1972 (37 FR 6476, March 30, 1972). The lack of jaguar sightings at that time, as well as some expert opinions cited in our July 22, 1997, clarifying rule (62 FR 39147) (for example, Swank and Teer 1989), suggest that jaguars in the United States had declined to such an extent by that point as to be effectively eliminated. Therefore, an argument could be made that no areas in the United States were occupied by the species at the time it was listed, or that only areas containing undisputed Class I records from between 1962 and 1982 were occupied. For this reason, we also analyzed whether or not these areas are essential to the conservation of the species. Through our analysis, we determine that they are essential to the conservation of the species for the following reasons: (1) They have demonstrated recent (since 1996) occupancy by jaguars; (2) they contain features that comprise jaguar habitat; and (3) they contribute to the species' persistence in the United States by allowing the normal demographic function and possible range expansion of the Northwestern Recovery Unit, which is essential to the conservation of the species (as discussed in the *Jaguar Recovery Planning in Relation to Critical Habitat* section, above). Therefore, whether or not they were occupied at the time of listing, we are designating those areas as critical habitat.

(43) Comment: The revised proposed rule is based on highly inaccurate and notoriously unreliable jaguar records rather than the Class I records standard that the Service established.

Our response: In determining areas that may be occupied by jaguars, we used undisputed Class I records from 1962 through September 11, 2013. We understand that some of the jaguar records used in our proposed rule may be disputed due to the possibility that female scat was used as a scent lure in some areas. Therefore, we removed all sightings that may have been influenced by female scat, which we determined to be from October 3, 2008 (the date of Emil McCain's request for jaguar scat from the Phoenix Zoo) through March 2, 2009 (the date Macho B was captured and flown to the Phoenix Zoo). See "Class I Records" section above and Table 1 above of this final rule for all of the undisputed Class I jaguar records used to determine occupancy.

In determining the physical and or biological features essential to the jaguar in the northwestern most part of its range, we relied on information compiled and produced by the Jaguar Recovery Team, which we consider the best available science. Our August 20, 2012 (77 FR 50214), proposed critical habitat designation was based on a preliminary report from the Jaguar Recovery Team entitled *Digital Mapping in Support of Recovery Planning for the Northern Jaguar* (Sanderson and Fisher 2011, pp. 1–11), which described a model for mapping jaguar habitat in the northwestern-most part of the species range. This 2011 report relied on 333 records of mapped jaguar observations across habitat variables to determine a categorization of the variables and selection of categories to include in the model.

These 333 records included cultural evidence of jaguars (such as a jaguar painting in a cave or a place name including the word jaguar), sightings of live animals or their sign, mortalities (such as hunting events or jaguars killed after a predation event), and observations of possible jaguars (such as a cat, spotted cat, or large quadruped (four-footed animal)). This means that these records included Class I (observations with physical evidence for verification, such as a skin, skull, or photo), Class II (observations with detailed information but no physical evidence, such as a first-hand report from a qualified individual), and Class III (all other observations, such as second- or third-hand reports of a jaguar) sightings. We refined this model further for proposed critical habitat in the United States by analyzing the same habitat variables, but we used only undisputed Class I jaguar observations in the United States from 1962 to mid-2012 (which, at that time, was 130 observations). This resulted in slightly

different ranges of habitat variables in some cases (specifically for canopy cover and the Human Influence Index) for proposed critical habitat than the range of habitat variables described in the 2011 habitat modeling report (Sanderson and Fisher 2011, pp. 1–11).

Since the publication of the proposed rule, the Jaguar Recovery Team continued to refine the jaguar habitat model. By including jaguar observations in addition to the 333 used in the preliminary 2011 report (described in Sanderson and Fisher 2013, pp. 3 and 7), developing a method to avoid pseudo-replication (many locations of the same animal in close proximity in time and in space) from camera trap and radiotelemetry studies (Sanderson and Fisher 2013, p. 3), and applying criteria and filters to the jaguar observation database to further refine the habitat variables included in the model (Sanderson and Fisher 2013, pp. 3–5 and Appendix 2; note that this resulted in splitting the proposed Northwestern Recovery Unit into northern and southern portions, each with a different range selected for some habitat variables (Sanderson and Fisher 2013, pp. 7 and 20)). This resulted in an updated habitat model, which was included in a final report we received in March 2013, entitled *Jaguar Habitat Modeling and Database Update* (Sanderson and Fisher 2013, entire).

In the updated jaguar habitat model, Sanderson and Fisher (2013, pp. 3–5 and Appendix 2) utilized all jaguar observations for which the description of the location was sufficient to place it with certainty within 10 km (6.2 mi) of its actual location, and for which a date to the nearest century was available. This resulted in 453 observations (note that the 452 included in Table 1.3 of Sanderson and Fisher (2013, p. 13) is incorrect) for inclusion in the updated model including Class I, II, and III sightings, but removed any sightings recorded as cat, spotted cat, or large quadruped (four-footed animal), as well as locations that were described too generally to accurately locate on a map (e.g., southern Arizona). The reason for selecting these observations to use in the habitat model was because the Jaguar Recovery Team came to the consensus this was appropriate after analyzing these jaguar observations through three different evidence filters: (1) Physical evidence only (photograph or video, skull, hide, or carcass measured; the equivalent of a very strict interpretation of Class I records), (2) physical and sign evidence (similar to the previous, but also including tracks, jaguar kills, and other physical evidence; the equivalent of Class I

records), and (3) all evidence types (similar to the previous, but also including first, second, and third-hand reports of jaguars, cultural artifacts, stories, and representations of jaguars, and other types of evidence; the equivalent of Class I, II, and III records; see Table 1.4 of Sanderson and Fisher (2013, p. 14) for a complete list of evidence types). Using these filters, Sanderson and Fisher (2013, pp. 3–5 and Appendix 2) analyzed the frequency that these 453 jaguar observations occurred across the range of habitat variables used in the model.

Upon viewing this analysis, the Jaguar Recovery Team determined that the overall pattern of frequencies of these observations relative to the habitat variables were similar, meaning that regardless of the type of evidence used (physical evidence only, physical and sign evidence, or all evidence), jaguar observations in relation to the habitat variables occurred with the same frequency. The Jaguar Recovery Team hypothesized that this is because jaguars are habitat generalists, with jaguar habitat generally defined as cover, prey, and limited human persecution within the proposed Northwestern Recovery Unit. The Jaguar Recovery Team, therefore, decided to use all types of evidence, because that resulted in the largest number of observations (453; note that the 452 included in Table 1.3 of Sanderson and Fisher (2013, p. 13) is incorrect) for inclusion in the updated model.

To further analyze the frequency of jaguar observations relative to habitat variables, the Service analyzed a subset of recent, highly accurate jaguar locations from Mexico and the United States to determine if filtering the observations in this way would influence the frequency that these observations occurred across the range of habitat variables. From the 453 observations used in the updated habitat model (Sanderson and Fisher 2013, entire), we selected records that met the following criteria: (1) They were part of a scientific study (and therefore utilized Global Positioning System (GPS) or radiotelemetry receivers); (2) they were not disputed due to the possible use of scent lure; and (3) they were from May 2000 forward (the time that public GPS receivers became more accurate because the intentional degradation of public GPS signals implemented for national security reasons was discontinued; see <http://www.gps.gov/systems/gps/modernization/sa/for more information>). Additionally, the same criteria to avoid pseudo-replication (Sanderson and Fisher 2013, p. 3) were applied to this subset of data. This

resulted in 333 observations, 44 of which are located in the United States (note that the reason the number of observations in the United States in this dataset is less than the number of observations used to determine critical habitat in our proposed rule is because of the methods the Jaguar Recovery Team developed to avoid pseudo-replication from camera trap and radiotelemetry studies; these methods were not applied to the dataset we used for our August 20, 2012, proposed rule). We also separated jaguar records from north to south in the same manner that Sanderson and Fisher (2013, p. 20) did for the tree cover and HII habitat variables.

The results of our additional analysis indicate that the overall pattern in frequency of jaguar observations using these highly accurate locations relative to the habitat variables is similar to the patterns observed using the entire data set used for the updated habitat model (Sanderson and Fisher 2013, entire). For example, 95 percent of these highly accurate locations are found in greater than 1 to 50 percent tree cover (for all jaguar observations except those in the southernmost part of the proposed Northwestern Recovery Unit); 97 percent correspond to a HII of less than 20 (for all jaguar observations except those in the southernmost part of the proposed Northwestern Recovery Unit); 99 percent are within 10 km (6.2 mi) of water; 75 percent are in intermediately, moderately, or highly rugged terrain; and 98 percent are found at less than 2,000 m (6,562 ft) in elevation. Therefore, for the reasons stated above, we determine that the Sanderson and Fisher (2013, entire) updated habitat model is not unreliable because it incorporates jaguar observations for which there is no physical evidence, and that the information from the Jaguar Recovery Team is the best available science regarding the habitat characteristics that are essential to the jaguar in the northwestern-most part of its range.

In the revised proposed rule and this final rule, we did not further refine the updated habitat model by using only Class I jaguar locations specific to the United States like we did in our analysis for the proposed rule, because we determined that the ranges of habitat variables selected by the Jaguar Recovery Team in the northern part of the proposed Northwestern Recovery Unit adequately represent available habitat for jaguars in the United States. We used the same data layers and ranges of habitat variables as used in the updated jaguar habitat model (Sanderson and Fisher 2013, entire) to

determine the PCEs of jaguar critical habitat in the United States. However, in two cases we substituted data layers for variables for which more detailed, higher-resolution data were available for the United States: (1) For water sources we substituted the United States Geological Services (USGS) National Hydrography Dataset (NHD) (available at <http://nhd.usgs.gov/data.html>) for USGS HydroSHEDS, and (2) for vegetation communities we substituted Brown and Lowe (1980) Biotic Communities of the Southwest (available at [http://azconservation.org/downloads/biotic\\_communities\\_of\\_the\\_southwest\\_gis\\_data](http://azconservation.org/downloads/biotic_communities_of_the_southwest_gis_data)) for World Wildlife Fund Ecoregions (note that the World Wildlife Fund Ecoregions habitat type representing the Sky Islands region in the Jaguar Recovery Team updated model was Sierra Madre Occidental pine-oak forests, for which we substituted the classifications of Madrean evergreen woodland and semidesert grassland from Biotic Communities of the Southwest to represent the Sky Islands region). The other data sources in the updated model include: (1) MODerate-resolution Imaging Spectroradiometer (MODIS) Tree cover for canopy cover (continuous field data) (available at <http://glcf.umd.edu/data/vcf/>); (2) Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER DEM) for ruggedness and elevation (available at <http://wist.echo.nasa.gov>); and (3) Human Influence Index (HII) for human influence (available at <http://sedac.ciesin.columbia.edu/wildareas/>) (to exclude cities, agricultural and developed rural areas). Sanderson and Fisher (2013, entire) did not use a data layer for prey, nor did we. See our response to comment number 20 in *Peer Reviewers Comments*. See the *Criteria Used to Identify Critical Habitat* section of the final rule for more information. In summary, we used only Class I undisputed sightings to define the occupied area, but after the sensitivity analysis described above we determined it was acceptable to use the habitat analysis based on a larger category of sightings.

(44) Comment: There is no long-term presence, sustained use, or reproduction of jaguars in the United States.

Our response: The Act does not require a breeding or reproducing population of jaguars, long-term presence of jaguars, or sustained use by jaguars for the purposes of designating critical habitat. See our response to comment number 11 in the *Peer Reviewer Comments* above.

(45) Comment: The Service states in the proposed rule that they 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. The area currently occupied by the jaguar outside the United States is adequate for the conservation of the jaguar.

Our response: See our response to comment number 1 in *Peer Reviewers Comments* above.

(46) Comment: The Service's critical habitat analysis and designation are scientifically invalid and incomplete in nature. Without an adequate, quantitative, science-based understanding of all components of jaguar habitat requirements, critical habitat cannot and should not be designated. The data are insufficient to understand jaguar habitat.

Our response: See our response to comment number 16 in *Peer Review Comments* above.

(47) Comment: The Service has accurately described habitat, but it does not mean these areas are essential.

Our response: The Service has designated critical habitat in compliance with the Act. Section 3(5)(A) states that the Service shall designate geographic areas occupied by the species at the time it was listed if they contain physical or biological features, which are essential to the conservation of the species, and 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. In the proposed rule and this final rule we have determined that areas in the United States occupied by the species at the time it was listed contain the physical or biological feature for jaguar critical habitat and the associated PCEs are present. We identify connectivity between expansive open spaces in the United States and Mexico as an essential component of the physical or biological feature essential for the conservation of the jaguar in the United States. Providing connectivity from the United States to Mexico is a key element to maintaining those processes. The ability for jaguars in the proposed Northwestern Recovery Unit to utilize physical and biological habitat features in the borderlands region is ecologically important to the recovery of the species; therefore, maintaining connectivity to Mexico is essential to the conservation of the jaguar. Consequently, we have also determined that areas in the United States outside the geographical area that may be occupied by the species at the time it is listed are essential to the conservation of the jaguar by providing connectivity

to Mexico (PCE 1) in areas containing low human influence and impact, and either or both vegetative cover or rugged terrain. It is our intent that the designation of critical habitat will protect the functional integrity of the features essential for jaguar life-history requirements for this purpose into the future.

(48) Comment: There are no PCEs in Arizona.

Our response: The best available scientific data indicates PCEs are present in Arizona. To the greatest extent possible, we have based jaguar critical habitat on information compiled and produced by the Jaguar Recovery Team. The Jaguar Recovery Team comprises jaguar experts, large-cat experts, and stakeholders from the United States and Mexico; therefore, we consider that the work produced by the team is the best available scientific and commercial data, and that following the team's recommendations is the best avenue to conservation of the species and by extension designating critical habitat. We have determined that the essential physical or biological feature for jaguar critical habitat and the associated PCEs are present in the United States, and that these areas contribute to the species' persistence and, therefore, overall conservation by providing areas to support some individuals during dispersal movements, by providing small patches of habitat (perhaps in some cases with a few resident jaguars), and as areas for cyclic expansion and contraction of the nearest core area and breeding population in the Northwestern Recovery Unit.

(49) Comment: The Arizona Game and Fish Department's Jaguar Conservation Assessment is the best science.

Our response: The Arizona Game and Fish Department's Jaguar Conservation Assessment provides valuable information regarding the status of the jaguar in Arizona, New Mexico, and northern Mexico. The Service considered and utilized this information in this final rule. See Johnson *et al.* (2011) as referenced in the final rule.

(50) Comment: The Service did not use the best available science because we utilized McCain and Childs (2008), in which female scat was used as scent lure.

Our response: The Service used the best available science to determine critical habitat for the jaguar. We understand that some of the jaguar records used in our proposed rule may be disputed due to the possibility that female scat was used as a scent lure in some areas. Therefore, we removed all sightings that may have been influenced

by female scat, which we determined to be from October 3, 2008 (the date of Emil McCain's request for jaguar scat from the Phoenix Zoo) through March 2, 2009 (the date Macho B was captured and flown to the Phoenix Zoo). See our response to comment number 43 in *Comments from States* above.

(51) Comment: The designation of critical habitat is because the Service is trying to avoid further litigation.

Our response: See our response to comment numbers 1 and 2 in the *Peer Reviewer Comments* above.

(52) Comment: The Service should not designate critical habitat because a PVA demonstrates that establishing a population of jaguars in the United States would destabilize populations in Sonora.

Our response: We disagree that designating critical habitat will destabilize the nearest breeding population in Mexico, and we disagree that habitat in the United States is a population sink. The purpose of designating critical habitat in the United States is not to create a self-sustaining, breeding population north of the U.S.-Mexico border, but to provide small patches of habitat (perhaps in some cases with a few resident jaguars) to allow for the cyclical expansion and contraction of the nearest core area in Mexico. See our response to comment number 18 in the *Peer Reviewer Comments* above.

(53) Comment: Given the heavy reliance that the Service places on the results of PVA models such as those presented by Miller (2013) to support the designation of critical habitat, we request that the data and complete modeling information be provided to the public such that the assumptions and specifics of these analyses can be properly and transparently analyzed.

Our response: The Service did not use the PVA to designate critical habitat for the jaguar. The Service originally planned to use the PVA in designating critical habitat for the jaguar; however, we realized that the habitat models (Sanderson and Fisher 2011, pp. 1–11; 2013, entire) created for the PHVA and PVA processes were the components that could best inform critical habitat for the jaguar in the United States. During the development of the Recovery Outline and as a part of the recovery planning process, the Jaguar Recovery Team worked with the Wildlife Conservation Society to create a jaguar habitat model (Sanderson and Fisher 2011, pp. 1–11; 2013, entire), and the Conservation Breeding Specialist Group of the Species Survival Commission/International Union for Conservation of Nature to conduct a PVA and PHVA for

the jaguar. We anticipated that these analyses would assist us in determining those recovery actions that would be most effective for achieving a viable jaguar population for the Northwestern Recovery Unit (not the United States), as well as provide information relevant to determining critical habitat for the jaguar. In both analyses, the focus was on the habitat and jaguar population in the Northwestern Recovery Unit. However, the PHVA and PVA themselves, while informative for recovery-planning purposes, did not contribute to the determination of critical habitat.

Critical habitat for the jaguar focuses on the physical or biological features available in the United States that are essential to the conservation of the species; it is not based on an overall number of jaguars, nor is it required to be, whereas the PVA is used to determine a minimum viable population. The purpose of critical habitat for the jaguar is to provide areas to support some individuals during dispersal movements, by providing small patches of habitat (perhaps in some cases with a few resident jaguars), and as areas for cyclic expansion and contraction of the nearest core area and breeding population in the Northwestern Recovery Unit, which contributes to the overall recovery of the jaguar. Therefore, the Service relied on habitat features as described in the preliminary report entitled *Digital Mapping in Support of Recovery Planning for the Northern Jaguar* (Sanderson and Fisher 2011, pp. 1–11) for our August 20, 2012, proposed rule (77 FR 50214), and a later report entitled *Jaguar Habitat Modeling and Database Update* (Sanderson and Fisher 2013, entire) for our July 1, 2013, revised proposed rule (78 FR 39237) and this final rule. Please see the *Criteria Used to Identify Critical Habitat* section of the final rule above and our response to comment number 18 in the *Peer Reviewer Comments* above for further information about how we incorporated these reports into our determination.

(54) Comment: The Service should not use the PVA (Miller 2013) because it relies on dubious data produced by McCain and Childs and other undisclosed data, the data has undergone 13 iterations of analysis, it is fatally flawed by substitution of untested hypotheses for data, the authors never cited any study of the prey base of the jaguar, it does not provide the necessary details to replicate the results of Miller (2013), it contradicts the treatment of parameter assumptions by the Service, it lacks sensitivity analyses to inform the

consequences of model assumptions, and natural and human-caused catastrophes are not included. Miller (2013) inappropriately interprets the results of its reported PVA models, and the Service has implicitly accepted the assumptions of Miller (2013) that dispersal costs and drought have no effect on jaguar populations.

Our response: See our response to comment number 53 in *Comments from States* above.

(55) Comment: Jaguar habitat cannot be determined without a full understanding of the jaguar's prey requirements and the availability of prey species within a habitat location to meet those requirements.

Our response: See our response to comment number 20 in the *Peer Reviewer Comments* above.

(56) Comment: The Service did not use data regarding the distribution of native prey in designating critical habitat. The Service has not presented and has refused to consider any relevant scientific data regarding the prey component of habitat for the jaguar within the proposed critical habitat boundaries.

Our response: We have relied on the best available scientific information that is readily available from the Arizona Game and Fish Department (Hunt Arizona 2012 Edition, available at: <http://www.azgfd.gov/regs/HuntArizona2012.pdf>) and the New Mexico Department of Game and Fish (Harvest Information, available at: <http://www.wildlife.state.nm.us/recreation/hunting/>). The Service did not receive additional data on prey abundance sufficient to include in critical habitat modeling efforts during any of the three comment periods. See our response to comment number 20 in the *Peer Reviewer Comments* above.

(57) Comment: Without an adequate, quantitative, science-based understanding of year-round water availability, critical habitat should not be designated.

Our response: We have determined that waters within 20 km (12.4 mi) of each other are available within the designated critical habitat. We consider the best available information for water sources in the United States as that produced by the USGS through their National Hydrography Dataset (NHD) (see our response to comment number 43 for a Web site link to the GIS data layer). For water sources, Sanderson and Fisher (2013, p. 6) utilized USGS HydroSHEDS in their updated model because this data layer covers both the United States and Mexico. In our modeling analysis, we substituted the USGS NHD because this data layer

provides higher-resolution data within the United States. The USGS NHD data layer indicates that there are no areas within critical habitat lacking waters within 20 km (12.4 mi) of each other. We understand that the availability of water across the landscape during the year is variable. Regardless, according to the best available scientific data, it appears that there is sufficient water available for jaguars within the final critical habitat designation.

(58) Comment: The Service fails to account for ecological changes as the result of climate change or climate-based factors that would eliminate proposed habitat. If the predicted climate change for the Southwest is hotter and drier, then the designated critical habitat would not have the capability to support jaguars; therefore, the Service should not designate critical habitat.

Our response: The Service recognizes that some models predict dramatic changes in Southwestern vegetation communities as a result of climate change (Weiss and Overpeck 2005, p. 2074; Archer and Predick 2008, p. 24) and the projections presented for the Southwest predict warmer, drier, and more drought-like conditions (Hoerling and Eischeid 2007, p. 19; Seager *et al.* 2007, p. 1181). Further, the Service acknowledges in the proposed rule and this final rule that climate change has the potential to adversely affect the jaguar within the next 50 to 100 years (Jaguar Recovery Team 2012, p. 32). The Service recognizes in the proposed rule and this final rule that the impact of future drought, which may be long-term and severe (Seager *et al.* 2007, pp. 1183–1184; Archer and Predick 2008, entire), may affect jaguar habitat in the U.S.-Mexico borderlands area, but the information currently available on the effects of global climate change and increasing temperatures does not make sufficiently precise estimates of the location and magnitude of the effects. We do not know whether the changes that have already occurred have affected jaguar populations or distribution, nor can we predict how the species will adapt to or be affected by the type and degree of climate changes forecast. Consequently, because the specific impacts of climate change on jaguar habitats remains uncertain at this time, we did not recommend any areas be designated as critical habitat or not be designated as critical habitat specifically to account for the negative effects of climate change.

(59) Comment: The Service should not consider climate change models because they cannot be downscaled to the level of the jaguar critical habitat.

Our response: The Service recognizes that the current climate change models are not downscaled to a local level. Projections of climate change globally and for broad regions through the 21st century are based on the results of modeling efforts using state-of-the-art Atmosphere-Ocean General Circulation Models and various greenhouse gas emissions scenarios (Meehl *et al.* 2007, p. 753; Randall *et al.* 2007, pp. 596–599). As is the case with all models, uncertainty is associated with the projections due to assumptions used and other features of the models. However, despite differences in assumptions and other parameters used in climate change models, the overall surface air temperature trajectory is one of increased warming in comparison to current conditions (Meehl *et al.* 2007, p. 762; Prinn *et al.* 2011, p. 527). Among the IPCC's projections for the 21st century are the following: (1) Warmer and more frequent hot days and nights over most of the earth's land areas are virtually certain; (2) increased frequency of warm spells and heat waves over most land areas is very likely, and the frequency of heavy precipitation events will increase over most areas; and (3) increases will likely occur in the incidence of extreme high sea level (excludes tsunamis), intense tropical cyclone activity, and the area affected by droughts in various regions of the world (IPCC 2007b, p. 8).

Climate simulations of the Palmer Drought Severity Index (a calculation of the cumulative effects of precipitation and temperature on surface moisture balance) for the Southwest for the periods of 2006 to 2030 and 2035 to 2060 show an increase in drought severity with surface warming. Additionally, drought still increases even during wetter simulations because of the effect of heat-related moisture loss through evaporation and evapotranspiration (Hoerling and Eischeid 2007, p. 19). Annual mean precipitation is likely to decrease in the Southwest, as is the length of snow season and snow depth (IPCC 2007b, p. 887). Most models project a widespread decrease in snow depth in the Rocky Mountains and earlier snowmelt (IPCC 2007b, p. 891). The Service will continue to follow and assess the science behind climate change and update our summaries as new information is published.

(60) Comment: There are no areas requiring special management.

Our response: Section 3(5)(A)(i) of the Act states that the physical and biological features essential to the conservation of the species “may” require special management

considerations or protections. The Act does not state that those features must require such management or protection. Nonetheless, special management considerations of the physical and biological feature essential to the conservation of the jaguar may be needed to alleviate the effects on jaguar habitat of road, power line, and pipeline projects; human developments; mining operations; and ground-based military activities. Future projects should avoid (to the maximum extent possible) areas identified as meeting the definition of critical habitat for jaguars, and if unavoidable, should be constructed or carried out to minimize habitat effects.

(61) Comment: The designation of jaguar critical habitat will limit game management activities and recreational activities, such as hunting, and litigation will be used to impact game activities.

Our response: 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.

In our economic analysis we considered all of the potential additional conservation efforts or restrictions that could occur as the result of the addition of critical habitat. We found the incremental effects of the critical habitat designation to be relatively minor, as additional measures beyond those already in place are unlikely. We found that the designation of critical habitat for the jaguar would not have direct impacts on the environment as designation is not expected to impose land use restrictions or prohibit land use activities.

Further, the species is already present in the United States. We are not proposing to reintroduce or supplement the existing jaguars in the United States. The designation of critical habitat does not translate into an increase of jaguars in the United States. As discussed in the proposed rule and this final rule, the purpose of designating critical habitat in the United States is to provide areas for transient jaguars (with possibly a few residents) to support the nearest breeding area to the south in Mexico, allowing this population to expand and contract, and, ultimately, recover. It is our intent that the designation of critical habitat will protect the functional integrity of the features essential for jaguar life-history requirements for this purpose into the future.

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. Any of these or other actions on Federal lands that may affect the jaguar or its designated critical habitat would be required to consult with the Service to ensure those actions are not adversely modifying its critical habitat. However, consultation is already required in occupied areas because the jaguar is listed as an endangered species. All projects with a Federal nexus proposed within jaguar critical habitat in the United States will be evaluated on a case-by-case basis with respect to section 7 of the Act.

(62) Comment: The Service should provide maps delineating the PCEs.

Our response: 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.regulations.gov> at Docket No. FWS-R2-ES-2012-0042 and at the Arizona Ecological Services Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**). Enhanced color maps and site-specific boundaries of the critical habitat in both GIS and Google Earth format can be viewed and downloaded from <http://www.fws.gov/southwest/es/arizona>.

(63) Comment: The Service did not provide the data or sources used in the habitat model.

Our response: As stated in the proposed rule and this final rule below are the PCEs and data sources. PCE 1: Provide connectivity to Mexico—If an occupied area was not connected to Mexico, we selected and added areas containing low human influence and impact (PCE 7) and either or both vegetative cover (PCE 4) or rugged terrain (PCE 5) to connect these areas directly to Mexico or to another occupied area providing connectivity to Mexico. Below are the data sources and Web site links to all the GIS data layers that we used in evaluating PCEs in this final rule.

PCE 2: Contain adequate levels of native prey species, including deer and javelina, as well as medium-sized prey such as coatis, skunks, raccoons, or jackrabbits—Comprehensive, consistent data regarding prey distribution across Arizona and New Mexico is lacking. Therefore, we relied on the best information that is readily available from the Arizona Game and Fish Department (Hunt Arizona 2012 Edition, available at: [http://](http://www.azgfd.gov/regs/HuntArizona2012.pdf)

[www.azgfd.gov/regs/HuntArizona2012.pdf](http://www.azgfd.gov/regs/HuntArizona2012.pdf)) and the New Mexico Department of Game and Fish (Harvest Information, available at: <http://www.wildlife.state.nm.us/recreation/hunting/>). Using this information, we determined that white-tailed deer and javelina (the preferred prey of the jaguar in the northwesternmost part of its range) have been present in each critical habitat unit (described in Final Critical Habitat Designation, above) for at least 50 years in Arizona, and have been successfully hunted in each hunt unit overlapping jaguar critical habitat for the same period of time (Game Management Units 30A, 34A, 34B, 35A, 35B, 36A, 36B, and 36C). Historical harvest information from New Mexico is not as readily available; however, based on the most recent harvest information, white-tailed deer and javelina are available in Unit 5 of jaguar critical habitat (Game Management Unit 27), and are likely available in Unit 6 (both described in Final Critical Habitat Designation, above) of jaguar critical habitat (Game Management Unit 26; we can determine that javelina have been successfully harvested in this Game Management Unit, but this particular unit lumps all deer together, so we are unable to distinguish hunt success between mule deer and white-tailed deer). Therefore, while we were unable to map prey distribution within Arizona and New Mexico, we believe adequate levels of prey are available, and have been available for at least 50 years in Arizona.

PCE 3: Include surface water sources available within 20 km (12.4 mi) of each other—For water sources we substituted the USGS National Hydrography Dataset (NHD) (available at <http://nhd.usgs.gov/data.html>) for the HydroSHEDS data layer used in the jaguar habitat model developed by the Jaguar Recovery Team (Sanderson and Fisher 2013, Table 1, p. 6).

PCE 4: Contain from greater than 1 to 50 percent canopy cover within Madrean evergreen woodland, generally recognized by a mixture of oak, juniper, and pine trees on the landscape, or semidesert grassland vegetation communities, usually characterized by *Pleuraphis mutica* (tobosagrass) or *Bouteloua eriopoda* (black grama) along with other grasses—For canopy cover we used the same data layer as used in the jaguar habitat model developed by the Jaguar Recovery Team (Sanderson and Fisher 2013, Table 1, p. 6), called MODerate-resolution Imaging Spectroradiometer (MODIS) Tree cover (continuous field data; available at <http://glcf.umd.edu/data/vcf/>). For vegetation communities we substituted

Brown and Lowe (1980) Biotic Communities of the Southwest (available at [http://azconservation.org/downloads/biotic\\_communities\\_of\\_the\\_southwest\\_gis\\_data](http://azconservation.org/downloads/biotic_communities_of_the_southwest_gis_data)) for the World Wildlife Fund Ecoregions data layer used in the jaguar habitat model developed by the Jaguar Recovery Team (Sanderson and Fisher 2013, Table 1, p. 6).

PCE 5: Are characterized by intermediately, moderately, or highly rugged terrain—For terrain ruggedness we used the same data layer as used in the jaguar habitat model developed by the Jaguar Recovery Team (Sanderson and Fisher 2013, Table 1, p. 6), called Advanced Spaceborne Thermal Emission and Reflection Radiometer Digital Elevation Model (ASTER DEM) (available at <https://lpdaac.usgs.gov/products/>) and followed the methodology described in Hatten *et al.* (2005, p. 1026).

PCE 6: Are below 2,000 m (6,562 feet) in elevation—For elevation we used the Advanced Spaceborne Thermal Emission and Reflection Radiometer Digital Elevation Model (ASTER DEM) data layer (available at <https://lpdaac.usgs.gov/products/>), which is a standard digital layer used to describe elevation.

PCE 7: Are characterized by minimal to no human population density, no major roads, or no stable nighttime lighting over any 1 km<sup>2</sup> (0.4 mi<sup>2</sup>) area—For human influence (to exclude cities, agricultural, and developed rural areas) we used the same data layer as used in the jaguar habitat model developed by the Jaguar Recovery Team (Sanderson and Fisher 2013, Table 1, p. 6), called the HII (available at <http://sedac.ciesin.columbia.edu/wildareas/>).

(64) Comment: Arizona and New Mexico should be withdrawn or excluded from critical habitat because the distribution of the jaguar within the United States represents less than 1 percent of the total occupied range and the jaguar rarely (if ever) contained a breeding population even in historical times.

Our response: The Service is not withdrawing Arizona or New Mexico from critical habitat because the Service is required under the Act to designate critical habitat to the maximum extent prudent and determinable. See our response to comment 1 in the *Peer Reviewer Comments* above.

Further, the Service is not excluding Arizona or New Mexico from critical habitat because section 4(b)(2) of the Act states that the Secretary shall designate and 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 impact of specifying any particular area as critical habitat. Areas that were considered for exclusion were locations where the benefits of exclusion may outweigh the benefits of inclusion as critical habitat (see Exclusion section above). The Secretary may exclude an area from critical habitat if she determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless she 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 identifying 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. In the case of the jaguar, the benefits of critical habitat include public awareness of jaguar presence and the importance of habitat protection, and in cases where a Federal nexus exists, increased habitat protection for the jaguar due to the protection from adverse modification or destruction of critical habitat. See the *Application of Section 4(b)(2) of the Act* section of this final rule.

(65) Comment: The area on the edge of Unit 3, to the north of the Santa Rita Mountains near Houghton Road, should be excluded from critical habitat. This area is near an existing residential development and planned for development.

Our response: Designation of critical habitat has been done in accordance with statutory requirements. The area on the edge of Unit 3 includes all the PCEs identified as the physical or biological features that provide for the jaguar's life-history processes and are essential to the conservation of the species, including being characterized by minimal to no human population density, no major roads, or no stable nighttime lighting over any 1-km<sup>2</sup> (0.4-mi<sup>2</sup>) area. Development actions funded, authorized, or carried out by a Federal agency must enter into consultation with the Service if the Federal action may affect critical habitat. Please see our

response to comment number 64 in the *Comments from States* above for additional information on exclusions under the Act. In the case of the jaguar where a Federal nexus exists, the benefits of critical habitat include increased habitat protection for the jaguar due to the protection from adverse modification or destruction of critical habitat. See the *Application of Section 4(b)(2) of the Act* for a full discussion of the areas we have determined are appropriate to exclude from the final designation of critical habitat.

(66) Comment: Federal lands should be excluded from critical habitat designation.

Our response: The Service is not excluding Federal lands from critical habitat designation. Please see our responses to comment numbers 64 and 65 in the *Comments from States* above for additional information on exclusions under the Act. There is additional benefit to including the federally owned lands in the designation of critical habitat because of the Federal agencies' obligation to consult under section 7 of the Act on activities that may adversely modify critical habitat. Consequently, we have not determined that the benefits of excluding these areas outweigh the benefits of including these areas. Please see the *Application of Section 4(b)(2) of the Act* section for a full discussion of the areas we have determined are appropriate to exclude from the final designation of critical habitat.

(67) Comment: The benefits of not designating critical habitat outweigh the benefits of designating critical habitat because the designation of critical habitat will result in denial of access to lands for jaguar conservation and research, fewer observations reported, and an increase in illegal activities undermining recovery of threatened and endangered species.

Our response: 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.

Designated 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. Any of

these or other actions on Federal lands that may affect the jaguar or its designated critical habitat would be required to consult with the Service to ensure those actions are not adversely modifying its critical habitat. However, consultation is already required because the jaguar is listed as endangered. All projects with a Federal nexus proposed within jaguar critical habitat in the United States will be evaluated on a case-by-case basis with respect to section 7 of the Act. The designation of critical habitat does not prohibit humans and legal activities. Legal activities that have a Federal nexus (in that they occur on Federal lands, require a Federal permit, or receive Federal funds) will be evaluated on a case-by-case basis with respect to section 7 (consultation with the Service) of the Act to ensure they do not destroy or adversely modify designated critical habitat.

We have been consulting with Federal agencies on their effects to the jaguar on Federal lands, or on projects for which a Federal nexus exists, since the species was listed in 1972. Since jaguars were listed, we have had no projects on privately owned lands that had a Federal nexus to trigger formal consultation under section 7 of the Act. Therefore, the Service does not anticipate a decrease in authorized access to lands for conservation and research or a decrease in observations reported. Further, illegal activity is not expected to increase with the designation of critical habitat, because designated critical habitat does not prevent legal activities from occurring within its boundaries, including law enforcement related to illegal activities (border control issues).

(68) Comment: The analysis of significance of the critical habitat designation within the draft environmental assessment is inadequate, and the Service should prepare a full environmental impact statement (EIS). We also received several similar comments from the members of the public.

Our response: We analyzed the potential impacts of critical habitat designation on the following resources and resource management types: Land use and management; fish, wildlife, and plants (including endangered and threatened species); fire management; water resources (including water management projects and groundwater pumping); livestock grazing; construction and development (including roads, bridges, dams, infrastructure, residential); tribal trust resources; soils; recreation and hunting; socioeconomics; environmental justice;

mining and minerals extraction; and National security. We found that the designation of critical habitat for the jaguar would not have direct impacts on the environment as designation is not expected to impose land use restrictions or prohibit land use activities. Our environmental assessment found that the impacts of the proposed critical habitat designation would be minor and not rise to a significant level. An EIS is required only if we find that the proposed action is expected to have a significant impact on the human environment. The completed studies, evaluations, and public outreach conducted by the Service have not identified impacts resulting from the proposed designation of critical habitat that are clearly significant. Based on our analysis and comments received from the public, we prepared a final EA and made a Finding of No Significant Impact (FONSI), negating the need for preparation of an EIS. We have determined our environmental assessment is consistent with the spirit and intent of NEPA. The final environmental assessment, FONSI, and final economic analysis provide our rationale for determining that critical habitat designation would not have a significant effect on the human environment. Those documents are available for public review (see **ADDRESSES** section).

(69) Comment: A complete economic analysis should accompany any proposed Federal action, which would allow stakeholders the opportunity to review, analyze, and comment on the economic consequences of this critical habitat designation.

Our response: The Service published our proposed rule to designate critical habitat for the jaguar August 20, 2012. At that time our current regulations at 50 CFR 424.19 stated: "The Secretary shall identify any significant activities that would either affect an area considered for designation as critical habitat or be likely to be affected by the designation, and shall, after proposing designation of such an area, consider the probable economic and other impacts of the designation upon proposed or ongoing activities." The Service interprets 'after proposing' to mean after publication of the proposed critical habitat rule. The President's February 28, 2012, memorandum directed the Service to take prompt steps to revise our regulations to provide that the economic analysis be completed and made available for public comment at the time of publication of a proposed rule to designate critical habitat. The Service finalized revisions to these regulations

on October 30, 2013, which was after we had published the proposed rule to designate critical habitat for the jaguar. Consequently, when we published the jaguar critical habitat rule, we followed the regulations that were current at the time.

(70) Comment: The draft economic analysis does not consider economic impacts resulting from employment-related uses of Federal land, such as mining and cattle grazing.

Our response: The draft economic analysis addresses impacts to mining operations in Chapter 5 and to livestock grazing in Chapter 3 (grazing on Federal lands) and Chapter 9 (grazing on State and private lands). We assume that economic activities occurring on Federal lands will have a Federal nexus for section 7 consultation through the Federal land manager. For activities such as livestock grazing that occur on State or private lands, we consider the potential for projects to involve Federal permits or funding, such as funding from NRCS. In these cases, we forecast section 7 consultations. We also consider the potential for indirect effects, such as the withdrawal of NRCS applications resulting from the stigma of critical habitat designation.

(71) Comment: The designation of critical habitat could have substantial economic impacts on local economies and employment by threatening Federal approval of the Rosemont Mine.

Our response: In October 2013, the Service completed a biological opinion and conference opinion with the U.S. Forest Service for the Rosemont Mine. The biological opinion concluded that the Rosemont Mine would not constitute jeopardy to the jaguar. A conference opinion was also completed to address the impacts of the Rosemont Mine to the then-proposed critical habitat designation for jaguar, which concluded that the mining operation is not likely to destroy or adversely modify jaguar critical habitat.

The final economic analysis has been revised based on the biological and conference opinion. The Rosemont Mine is located in a unit of critical habitat that is occupied by the jaguar. Since the jaguar is currently a listed species, conservation efforts are already undertaken to avoid jeopardy to the species in this area and, therefore, the economic impacts are predominantly captured in the baseline. Through our evaluation of impacts of the critical habitat designation, we determined that most of the conservation efforts are not a result of the critical habitat designation itself, but rather a result of the jaguar being a listed species, and, therefore, incremental impacts of the

critical habitat designation are largely limited to transactional costs. As a result, the incremental impact, economic or from other relevant factors, of the designation on the mine is expected to be minimal.

Section 4(b)(2) of the Act states that the Secretary may exclude a specific area from critical habitat if the benefits of excluding the area outweigh the conservation benefits of including it, providing the exclusion does not result in the extinction of the species. In the case of the Rosemont Mine, we have not found any disproportionate impacts, economic or other, on the Rosemont Mine due to the critical habitat designation because the area is occupied, a section 7 consultation was just completed providing approval for the mine project, and conservation measures are primarily captured in the baseline. Therefore, the Secretary did not find it to be reasonable or appropriate for the Service to enter into the discretionary exclusion analysis about whether to exclude the mine from the final designation.

(72) Comment: The designation could adversely affect operations at Fort Huachuca. Fort Huachuca is important to the local economy, it contributes approximately \$2.4 billion annually to the state economy, and it is the primary employer in the area.

Our response: Fort Huachuca's 2013 INRMP includes benefits for jaguars and their habitat that were not included in their previous INRMP. Based on our review of Fort Huachuca's 2013 INRMP, and in accordance with section 4(a)(3)(B)(i) of the Act, we have determined that the portion of Unit 3 and Subunit 4c within this installation, identified as meeting the definition of critical habitat, is subject to the INRMP, and that conservation efforts identified in this INRMP will provide a benefit to the jaguar. Therefore, lands within this installation are exempt from critical habitat designation under section 4(a)(3)(B) of the Act. Further, as described in section 8.1 of the draft economic analysis, the Department of Defense (DOD) has already incorporated the species into its management planning. As a result, the Service and DOD do not anticipate that jaguar critical habitat designation will change the outcome of future section 7 consultations associated with operations at Fort Huachuca. Furthermore, because conservation management for the jaguar is typically passive in nature (i.e., no specific changes to operations at Fort Huachuca are anticipated to accommodate jaguar conservation), the draft economic analysis does not forecast any restrictions on Fort actions

that would result in costs of conservation efforts for the jaguar, even absent critical habitat designation.

(73) Comment: The draft economic analysis underestimates impacts to livestock grazing. Costs that a rancher will incur for a single consultation could exceed \$20,000 to \$25,000, and could include such expenses as hiring consultants, attending consultations, reviewing biological opinions, participating in the NEPA process, filing appeals of other Federal agency findings if necessary, modifying ranching operations, modifying water use, and implementing jaguar conservation measures.

Our response: While the commenters are correct that consultation efforts have the potential to result, in some cases, in significant costs, the economic analysis does not anticipate that many new consultations would occur as a result of critical habitat alone; that is, most consultations on jaguar are anticipated to occur regardless of critical habitat designation. As a result, the incremental costs of considering critical habitat in a jaguar consultation are low because consultation is already occurring to address impacts to the species. Similarly, conservation efforts for jaguar are not anticipated to exceed those that already would have been requested under the baseline (for the species). As such, incremental costs associated with undertaking these measures are not included in the economic analysis.

(74) Comment: The designation of jaguar critical habitat may result in increased livestock predation. These impacts are not evaluated in the draft economic analysis.

Our response: The Service is aware of one jaguar depredation event in the United States since 1961, which occurred in the Altar Valley area in 2007 (McCain and Childs 2008, pp. 4–5). The Service recognizes that cattle depredation may occur. However, the jaguar is already present in the United States and protected under the Act as a listed species. The designation of critical habitat in the United States will not change the possibility of cattle depredation due to jaguars. The Service is not proposing to reintroduce or supplement jaguar populations in the United States. Therefore, we do not anticipate that designating critical habitat for the jaguar will result in economic impacts through livestock depredation. We are aware, however, of the concern that cattle depredations may occur in the future, and we are working with the Jaguar Recovery Team to develop strategies to avoid these types of conflicts.

(75) Comment: The draft economic analysis underestimates impacts because it does not consider water use and water allocation issues. The designation will create water use conflicts, resulting in negative impacts to livestock producers. The designation could result in substantial economic impacts by infringing on existing water rights to provide water for jaguar conservation.

Our response: As described in the Service's incremental effects memorandum, provided as Appendix C to the draft economic analysis, possible project modifications to avoid jeopardy to the species and adverse modification or destruction of critical habitat include: using technology-based surveillance rather than fencing where possible; creating permeable highways by including wildlife crossings appropriate to jaguars in the project design; re-vegetating and restoring areas of large-scale habitat removal; modifying or eliminating the presence of stable nighttime lighting; reducing the footprint of large facilities to the maximum extent practicable; minimizing the amount or extent of human presence, vehicles, or traffic in a given area; providing conservation measures to restore, enhance, and protect habitat within critical habitat units; offsetting permanent habitat loss, modification, or fragmentation resulting from agency actions with habitat that is permanently protected, including funding to ensure the habitat is managed permanently for the protection of the species; and providing resources to assess the effects of the action on jaguar habitat connectivity and function. These conservation measures are addressed as relevant for projects forecast in the draft economic analysis. Based on these possible project modifications, the draft economic analysis does not expect that jaguar conservation will require changes to water allocation.

#### Comments From Federal Agencies

(76) Comment: There is no habitat in the United States that is critical to the recovery of the jaguar or its survival as a species.

Our response: See our response to comment number 1 in the *Peer Reviewer Comments* above.

(77) Comment: Jaguar critical habitat in the United States is not essential because jaguars have persisted in the Northern Recovery Unit for the last 50 years with no evidence of breeding in the United States during that time.

Our response: See our response to comment number 4 in the *Peer Reviewer Comments* above.

(78) Comment: Areas in the United States will function primarily to support dispersing or transient jaguars, although breeding could have occurred in the past.

Our response: See our response to comment number 11 in the *Peer Reviewer Comments* above.

(79) Comment: Designation of critical habitat is not due to new data but due to litigation.

Our response: See our response to comment number 2 in the *Peer Reviewer Comments* above.

(80) Comment: Fort Huachuca should be exempted from critical habitat designation based on the Fort's Integrated Natural Resources Management Plan (INRMP) that was prepared under section 101 of the Sikes Act (16 U.S.C. 670a) and which currently provides a benefit to the jaguar.

Our response: The Service has exempted Fort Huachuca from critical habitat designation based on their INRMP. See the Exemptions section of this final rule for further information.

(81) Comment: The Chiricahua and Dos Cabezas Mountains are essential and therefore should be included in the designation.

Our response: The critical habitat designation includes those areas in the United States that meet the definition of critical habitat as defined in the Act. Because habitat in the United States is at the edge of the species' northern range, and is marginal compared to known habitat throughout the range, we have determined that all of the primary constituent elements discussed must be present in each specific area to constitute critical jaguar habitat in the United States, including connectivity to Mexico (but that connectivity may be provided either through a direct connection to the border or by other areas essential for the conservation of the species; see *Areas Essential for the Conservation of Jaguars*, above). The Chiricahua and Dos Cabezas Mountains either were not occupied at the time of listing or do not contain the PBF and PCEs the Service has determined are needed for it to function for jaguars.

(82) Comment: Valley bottoms should be included in the critical habitat designation because it is clear that jaguars traverse the valley bottoms to reach more suitable habitat. Further, these areas potentially contain necessary water sources.

Our response: We acknowledge that jaguars will use valley bottoms (for example, McCain and Childs 2008, p. 7), and other areas of habitat connectivity to move between areas of higher quality habitat found in isolated mountain

ranges in the United States and that water sources within valleys may be used by jaguars. However, as described in the proposed rule and this final rule, there is only one occurrence record of a jaguar in a valley between mountain ranges. Therefore, the best available scientific and commercial information does not allow us to determine which particular area within the valleys may be essential, and all of the valley habitat is not essential to the conservation of the species. See *Connectivity between expansive open spaces within the United States*, above, in this final rule. Also, see our response to comment number 8 in the *Peer Reviewer Comments* above.

(83) Comment: The listing time period used by the Service to determine occupancy is not consistent with the Act.

Our response: See our response to comment number 42 in *Comments from the States* above.

(84) Comment: There will never be a breeding population in the United States, thus there is no need for critical habitat in the United States.

Our response: See our response to comment number 11 in *Peer Reviewer Comments* above.

(85) Comment: Jaguar prey species are in decline and will not support jaguars.

Our response: See our response to comment number 20 in *Peer Reviewer Comments* above.

(86) Comment: The Service neglects to account for the fact that the DHS can waive all laws to expedite construction of a border fence and to remove any obstructions to the detection of illegal aliens, 1,126 km (700 mi) of barrier fence is required to be built along the U.S.-Mexico border, lighting has been added along the border that would impact jaguar critical habitat, and a constant flow of human traffic occurs through jaguar critical habitat. This is not consistent with the HII PCE.

Additionally, the Service only considered stationary human population and did not account for transient humans crossing the border.

Our response: We understand that laws related to the expeditious construction of border infrastructure in areas of high illegal entry may be waived by the Secretary of DHS, and have discussed this in the *Special Management Considerations or Protections* section of this final rule. As also noted in this final rule, there are no known plans to construct additional security fences in the designated critical habitat, although should future national security issues require additional measures, the Secretary of DHS may invoke the waiver, and special

management considerations would continue to occur on a voluntary basis on activities covered by a waiver. There are other forms of border infrastructure, however, that do not fall under this waiver (construction of towers, for example); therefore, special management considerations apply to these projects, and we consult with DHS to minimize the impacts to listed species and their critical habitat.

We also understand that human activity (both legal and illegal) occurs along the U.S.-Mexico border, including within critical habitat. At times this activity can be intense, involving many people, vehicles, lighting, and equipment. However, this activity is also transitory, in that activity hot spots will develop in one area, then move to another area for a variety of reasons (for example, increased law enforcement can shift illegal border activity to another area). Therefore, because of the variable nature and unknown location of this activity, we are not able to predict its effect on jaguar critical habitat. Additionally, because the impacts of these activities shift around the landscape and are not permanent in nature, they do not necessarily entirely preclude jaguars from using an area, once the activity diminishes and moves to another location. Therefore, we continue to use HII as the best available science reflecting human influence on the landscape.

(87) Comment: With Arizona alone growing by 1.5 million people from the mid-1990s to mid-2000s, the Service should account for future population growth in the southwest.

Our response: We acknowledge that the human population has grown and continues to grow throughout the southwestern United States. Should this growth occur within critical habitat to the extent that the HII PCE may be affected and a Federal nexus exists, the Service would consult on proposed actions related to human population growth (e.g., roads, development, transmission lines) with the action agency to minimize the effects of increasing the HII within critical habitat. We understand human population growth may occur without consultation in areas where a Federal nexus does not exist; in these areas, special management considerations to minimize the effects of increasing the HII would occur on a voluntary basis.

(88) Comment: The Service should consider that as conservation uncertainties arise in the Mexican part of the range and climate change alters natural resources, protecting critical habitat in the United States and facilitating connectivity between current

range and historical range with adequate, and sometimes superior, resources is paramount for longitudinal conservation action. The borderlands area is often referred to as marginal habitat because the core breeding population is much farther south, but this area is perhaps growing more critical for the species and represents a feasible opportunity for conservation and recovery. Climate change is an important factor in the recovery of jaguars in the borderlands and the Service appropriately included it in the discussion within the proposed rule. Additionally, climate change effects on jaguars are uncertain, but the Service should consider that some potential impacts, such as increased periods of drought, underscore the importance of building resource capacity and connectivity.

Our response: The Service recognizes that climate change may be a factor in the conservation of the jaguar. The Service further recognizes the importance of maintaining connectivity between the United States and Mexico. In our proposed rule and this final rule we identify connectivity between expansive open spaces in the United States and Mexico as an essential component of the physical or biological feature essential for the conservation of the jaguar in the United States. The ability for jaguars in the proposed Northwestern Recovery Unit to utilize physical and biological habitat features in the borderlands region is ecologically important to the recovery of the species; therefore, maintaining connectivity to Mexico is essential to the conservation of the jaguar.

(89) Comment: The maps provided by the Service are insufficient in detail.

Our response: 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.regulations.gov> at Docket No. FWS-R2-ES-2012-0042 and at the Arizona Ecological Services Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**). Enhanced color maps and site-specific boundaries of the critical habitat in both GIS and Google Earth format can be viewed and downloaded from <http://www.fws.gov/southwest/es/arizona.htm>. See our response to comment 43 in *Comments from States* above for the Web site links to all the GIS data layers that we used in evaluating PCEs in this final rule.

(90) Comment: Has government-to-government consultation with the Service occurred?

Our response: Yes. Please see the Government-to-Government

Relationship with Tribes section of this final rule for a description of consultation between the Service and the Tohono O'odham Nation.

(91) Comment: The BIA requested that the Tohono O'odham Nation be excluded from critical habitat designation based on section 4(b)(2) of the Act. The BIA references the jaguar management plan that is under development by the Tohono O'odham Nation.

Our response: We have determined, pursuant to section 4(b)(2) of the Act, that we will exclude approximately 20,764 ha (51,308 ac) of Tohono O'odham Nation land in Subunit 1a and approximately 10,829 ha (26,759 ac) of Tohono O'odham Nation land in Subunit 1b, from the final designation of critical habitat. See the *Exclusions Based on Other Relevant Impacts* section above for more detailed information.

(92) Comment: Several points in the proposed rule indicate that adverse modification analysis would be required only for occupied habitat. Why would the analysis not be required for unoccupied critical habitat?

Our response: Adverse modification analysis during section 7 consultation would be conducted for projects with a Federal nexus that may adversely modify critical habitat in both occupied and unoccupied critical habitat.

(93) Comment: The draft economic analysis should address impacts to national security that could result if the construction of border fences or related infrastructure is affected by jaguar conservation. Land located near the border may be devalued due to national security impacts. Illegal immigration and drug trafficking may increase in the vicinity of the proposed designation.

Our response: Chapter 4 of the draft economic analysis discusses impacts to border protection activities. As described in section 4.1 of the draft economic analysis, CBP does not anticipate that activities planned within the proposed designation will cause permanent changes to the landscape or sever connectivity to Mexico and are, therefore, unlikely to require any changes to jaguar conservation measures than those already planned under the listing of the species. CBP already implements baseline conservation measures according to best management practices for the jaguar in all critical habitat units. As a result, we do not forecast any impacts to national security as a result of critical habitat designation for jaguar.

#### Comments From Tribes

(94) Comment: The Tohono O'odham Nation should be excluded from critical habitat designation based on section 4(b)(2) of the Act.

Our response: We have determined, pursuant to section 4(b)(2) of the Act, that we will exclude approximately 20,764 ha (51,308 ac) of Tohono O'odham Nation land in Subunit 1a and approximately 10,829 ha (26,759 ac) of Tohono O'odham Nation land in Subunit 1b, from the final designation of critical habitat. See the *Exclusions Based on Other Relevant Impacts* section above for more detailed information.

(95) Comment: Fort Huachuca should be exempted from critical habitat designation based on the Fort's Integrated Natural Resources Management Plan (INRMP) that was prepared under section 101 of the Sikes Act (16 U.S.C. 670a) and which currently provides a benefit to the jaguar.

Our response: The Service has exempted Fort Huachuca from critical habitat designation based on their INRMP. See the Exemptions section of this final rule for further information.

#### Public Comments

##### General

(96) Comment: Data indicate Arizona and New Mexico lack the habitat necessary for jaguars. There is no Sinaloan thornscrub in the United States; therefore, the United States does not have the vegetation necessary for jaguars to feed, breed, reproduce, and find shelter, which is why there is no jaguar population in existence in the United States.

Our response: The Service acknowledges that Sinaloan thornscrub does not occur in the United States. However, we have determined that Madrean evergreen woodland and semidesert grassland provide the biotic community component of the physical or biological feature utilized by jaguars north of the U.S.-Mexico border. Therefore, these two biotic communities are included as a PCE within the designation. Further, the Act does not require a breeding or reproducing population of jaguars be present for the purposes of designating critical habitat.

(97) Comment: Habitat in the United States (including southeastern Arizona and southwestern New Mexico) is at the northernmost extreme of the jaguar's range, and is peripheral, marginal, and not essential to the conservation of the species, as demonstrated by Rabinowitz (1997), who has consistently maintained there is no area in the southwestern

United States that is critical to the survival of the jaguar and that the area is marginal for the jaguar in terms of water, cover, and prey density. The United States is not shown as a jaguar corridor on the map published by Rabinowitz and Zeller (2010). Biological studies and professional opinions abound, and are cited by organizations opposing this designation, that credibly show the jaguar prefers a wet tropical climate to breed and exist.

Our response: The Service agrees that habitat in the United States is on the northern periphery of the jaguar's range; however, the Service has identified critical habitat for the jaguar in accordance with the Act and implementing regulations. See our response to comment number 1 in the *Peer Reviewer Comments* above.

(98) Comment: Any area that contains the PCEs does not automatically qualify as critical habitat. It can hardly be said that these features are essential to the conservation of the species merely because they can sustain temporary presence of the species.

Our response: The Act does not state that critical habitat applies only to resident or breeding populations, or that for an area to be occupied critical habitat it must contain a female or documented breeding. Rather, section 3(5)(A)(i) of the Act defines occupancy as the specific areas within the geographical area occupied by the species, at the time it is listed. Further, in the decision of *Arizona Cattle Grower's Assoc. v. Salazar*, 2009 U.S. App. Lexis 29107 (June 4, 2010), the Ninth Circuit affirmed that the Service has the authority to designate as occupied all areas used by a listed species with sufficient regularity that members of the species are likely to be present during any reasonable span of time. Therefore, occupancy of an area can be indicated by the presence of an individual member of the species, and we have determined that critical habitat may have been occupied at the time of listing based on this definition in conjunction with observations of jaguars in those areas (as described in Table 1 of this final rule).

(99) Comment: The proposed critical habitat in the United States will have little to no effect on the jaguar's survival and recovery. The listed species is the entire jaguar taxon; critical habitat, therefore, must be essential to conserving that species as a whole. Other than a possible contribution to the genetic diversity of the species, there is no indication of any kind why the designation of critical habitat would somehow be essential to the conservation of the species as a whole.

Our response: Critical habitat in the United States contributes to recovery across the jaguar's entire range by providing the physical or biological feature for jaguar critical habitat and the associated PCEs. The Service recognizes that the designated critical habitat in the United States is only a small portion of the jaguar's range and we anticipate that recovery of the entire species will rely primarily on actions that occur outside of the United States; activities that may adversely or beneficially affect jaguars in the United States are less likely to affect recovery than activities in core areas of their range (Jaguar Recovery Team 2012, p. 38). However, the portion of the range in the United States is located within a secondary area (as identified in the Recovery Outline) that provides a recovery function benefitting the overall recovery unit (Jaguar Recovery Team 2012, pp. 40, 42). For example, specific areas within this secondary area that provide the physical and biological features essential to jaguar habitat can contribute to the species' persistence and, therefore, overall conservation by providing areas to support some individuals during dispersal movements, by providing small patches of habitat (perhaps in some cases with a few resident jaguars), and as areas for cyclic expansion and contraction of the nearest core area and breeding population in the Northwestern Recovery Unit (about 210 km (130 mi) south of the U.S.-Mexico border).

Independent peer review cited in our July 22, 1997, clarifying rule (62 FR 39147, pp. 39153–39154) states that individuals dispersing into the United States are important because they occupy habitat that serves as a buffer to zones of regular reproduction and are potential colonizers of vacant range, and that, as such, areas supporting them are important to maintaining normal demographics, as well as allowing for possible range expansion. As described in the Recovery Outline for the Jaguar (Jaguar Recovery Team 2012, pp. 40, 42), the Northwestern Recovery Unit is essential for the conservation of the species; therefore, consideration of the spatial and biological dynamics that allow this unit to function and that benefit the overall unit is prudent. Providing connectivity from the United States to Mexico is a key element to maintaining those processes.

(100) Comment: There is no rational or prudent basis for designating critical habitat in the United States. There is no area in the United States that is essential to the conservation of jaguars.

Our response: The Service has identified critical habitat for the jaguar

in accordance with the Act and its implementing regulations. The Service has determined that designation of critical habitat for the jaguar is prudent and determinable based on the best available scientific data available. Section 4(a)(3)(A) of the Act, states that critical habitat shall be designated for endangered and threatened species to the maximum extent prudent and determinable. Therefore, we are required to designate critical habitat for the jaguar to fulfill our legal and statutory obligations. See our response to comment number 1 in the *Peer Reviewer Comments* above.

(101) Comment: The Service states that a goal of critical habitat is to support a population of 50 to 100 jaguars in the United States by protecting and increasing connectivity between the United States and Mexico.

Our response: See our response to comment number 4 in the *Peer Review Comment* section above.

(102) Comment: Corridors to unsuitable or marginal habitat can destabilize jaguar populations (Desbiez *et al.* 2012), particularly if the source population is itself unstable. Analyses presented by Carillo *et al.* (2007) indicate that the Sonora population appears to be decreasing, and some jaguar experts consider the southwestern United States to consist of marginal habitat for jaguars (see Johnson *et al.* 2011). Thus, linking jaguar population in Mexico to the United States may establish a detrimental source-sink relationship. The results of our PVA analysis indicate that the Service's goal of establishing a breeding population of jaguars in the United States may have negative consequences to the stability and persistence of jaguar populations in the Northwestern Management Unit.

Our response: We disagree that designating critical habitat will destabilize the nearest breeding population in Mexico. The purpose of designating critical habitat in the United States is not to create a self-sustaining, breeding population north of the U.S.-Mexico border, but to provide small patches of habitat (perhaps in some cases with a few resident jaguars) to allow for the cyclical expansion and contraction of the nearest core area in Mexico. Therefore, critical habitat in the United States contributes to recovery by providing protection of these areas within the proposed Northwestern Recovery Unit. Further, the jaguar has been listed as an endangered species since 1972, and already receives protection under the Act. The designation of critical habitat does not increase the number of jaguars present

in the United States. 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. See our response to comment number 52 in *Comments from States* above.

(103) Comment: The Service should consider the importance of connecting the Jalisco and Sonora populations to support a stable metapopulation in the Northwestern Management Unit. Increasing connectivity between Jalisco and Sonora improves population growth rate, decreases the probability of extinction and increases genetic heterozygosity in Sonora, creates a stable Sonoran population, and supports a stable metapopulation. Creating a breeding population in the United States could have detrimental effects on population growth and persistence in the region, and conservation measures in Mexico rather than the United States are needed to benefit jaguars in the Northwestern Management Unit.

Our response: We agree that jaguar conservation in Mexico and throughout its range are necessary to recover the species, and we are collaborating with partners to conserve jaguars throughout their range, including improving dispersal opportunities between the Jalisco and Sonora populations. We disagree that designating critical habitat will detrimentally affect jaguar population growth and persistence in the region (see our response to comment number 15 in *Peer Reviewer Comments* and 52 in *Comments from States* above). The purpose of the designation of critical habitat is not to establish a breeding population of jaguars in the United States. The purpose of critical habitat in the United States is to provide small patches of habitat (perhaps in some cases with a few resident jaguars) to allow for the cyclical expansion and contraction of the nearest core area in Mexico. Critical habitat is not being designated to create a self-sustaining, breeding population north of the U.S.-Mexico border, but to allow individuals from the nearest breeding area in Mexico areas within which they may persist during a portion of their life cycle.

(104) Comment: The Service should work with Dr. Rabinowitz and other jaguar experts in Mexico, Central America, and South America to protect jaguar habitat, including corridors. Since the nearest breeding population is 209 km (130 mi) south in Mexico and there are breeding populations throughout Central and South America,

science and logic dictate spending resources and efforts where jaguars breed.

Our response: The Service is collaborating with partners (including members of Dr. Rabinowitz's organization, Panthera) to conserve jaguars and their habitat throughout the range of the jaguar, particularly within the proposed Northwestern Recovery Unit. We are currently working with the Jaguar Recovery Team to complete a draft recovery plan for the jaguar, which we expect will be available in 2014. The recovery plan will include guidance, criteria, and actions pertaining to recovering the species throughout its entire range (although focusing on the Northwestern Recovery Unit), including information about habitat, corridor, and breeding area protection.

(105) Comment: The designation of critical habitat appears political instead of scientific, which violates the Act at every level.

Our response: Designation of critical habitat has been done in accordance with statutory requirements. See our response to comment number 1 in the *Peer Reviewer Comments* above.

(106) Comment: Set-aside protection mechanisms, like critical habitat, may not be necessary to meet the jaguar's habitat needs.

Our response: See our response to comment number 1 in the *Peer Reviewer Comments* above.

(107) Comment: Habitat fitting the description of the physical or biological feature and associated PCEs of jaguar critical habitat is widespread in Arizona, and any actions that would impact jaguars are already required to be evaluated by provisions under the Endangered Species Act and National Environmental Policy Act (NEPA).

Our response: Since the jaguar is a federally listed species under the Act, actions with a Federal nexus that may impact jaguars are evaluated under the Act and potentially NEPA. However, critical habitat does afford protection to the jaguar through section 7 consultation under 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. 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 role for the species. Therefore, actions that are funded, permitted, or carried out by a Federal

agency within jaguar critical habitat will continue to be evaluated to determine their impacts on critical habitat.

(108) Comment: The lack of breeding populations or residency in the United States indicates there is no critical habitat. There are no areas in the United States that could be considered "occupied." The males detected in the United States have likely originated from the Sonora population, and their genetic resources are thus a consequence of the population genetics and environmental conditions acting upon the Sonora population. While the Sonora population may be important for the conservation of the species, a small population in the United States, if it was to exist, is not an important peripheral population in the context of the conservation of the species. Based on the movement behavior of female jaguars, it is unlikely that female jaguars would cross road barriers (some including large highways with presumably high traffic volumes) or other areas of human disturbance in the over 130 miles between the Sonora population and the areas of critical habitat in the United States. Suitable habitat for jaguars between the Sonora population and the United States is fragmented and of marginal quality. A general increase in human impacts across the landscape through time is correlated with a lack of female records in the United States, lending credence to the possibility that conditions in northern Mexico may act as a barrier to female dispersal to the United States.

Our response: As described in the proposed rule and this final rule, barriers prohibiting the dispersal of females to the United States are unknown. Based on information about large carnivores, male felids can move long distances in the process of dispersal (Logan *et al.* 1986 and López González 1999, as described in Boydston and López González 2005, p. 51), but when female dispersal does occur, distances are much shorter (Logan and Sweanor 2011, as described in Boydston and López González 2005, p. 51). Therefore, it may be possible that barriers exist to female dispersal into the United States; however, as described in the Recovery Outline for the Jaguar (Jaguar Recovery Team 2012, pp. 24, 44), further research on gender- and age-specific estimates of dispersal rates and travel distances is needed within the Northwestern Recovery Unit. The Act does not state that critical habitat applies only to resident or breeding populations, or that for an area to be occupied critical habitat it must contain a female or documented breeding. Further, establishing a breeding

population of jaguars is not the purpose of critical habitat designation. See our response to comment number 11 in *Peer Reviewers Comments* above.

(109) Comment: Some authors argue that suitable habitat for females does exist in southern Arizona and New Mexico, but note that habitat preferences differ considerably between male and female jaguars (Boydston and López-González 2005). The lack of female detections in the United States may be indicative of conditions over the past 60 years that have resulted in an altered landscape whereby habitats preferred by females (e.g., forested areas, especially broad-leaf forests (Boydston and López-González 2005)) no longer occur in the United States in sufficient quantities to support female occupancy and breeding. Moreover, because females have not been detected recently in the United States, habitat conditions at the locations of female jaguar detections, used in building habitat models, have likely changed, a fact that is not accounted for by the approach taken by the Service's modeling effort to identify and map critical habitat. Similarly, the development of PCEs for critical habitat is based on records that are likely to be mostly male jaguars. Consequently, the areas identified as critical habitat may be suitable for male jaguars, but fail either to benefit female jaguars or allow for the establishment of breeding territories.

Our response: We acknowledge that the majority of detections used to develop the habitat model for the jaguar in the Northwestern Recovery Unit may have been males. Standard camera-trapping techniques appear to have a bias towards capturing male jaguars as opposed to females (Harmsen *et al.* 2009, entire). Harmsen *et al.* (2009, pp. 615–616) captured 23 individual males during 100 days of camera trapping, but only captured 6 individual females during this same time period. This is likely because male jaguars roam farther and tend to use large pathways more than females, making it more likely they will be picked up using camera trap techniques (which often are located along open pathways to facilitate capturing recognizable photos). However, even when used off trail (such as along small streams, game trails, and landscape features), Harmsen (2006) found that camera trapping did not reveal any habitat characteristics associated with higher capture rates of females (as cited in Harmsen *et al.* 2009, pp. 613, 618).

Even so, the Act does not state that critical habitat must apply to both males and females of a species. Further, establishing a breeding population of

jaguars is not the purpose of critical habitat designation. See our response to comment number 11 in *Peer Reviewers Comments* above.

(110) Comment: The United States is a peripheral area; therefore, the Service should not designate critical habitat in the United States.

Our response: Please see our response to comment number 1 in the *Peer Reviewer Comments* above.

(111) Comment: Habitat in the United States is marginal and not essential to the conservation of the species, as demonstrated by Rabinowitz (2010).

Our response: The Service agrees that habitat in the United States is on the northern periphery of the jaguar's range; however, the Service has identified critical habitat for the jaguar in accordance with the Act and implementing regulations. See our response to comment number 1 in the *Peer Reviewer Comments* above.

(112) Comment: The Service should exclude the Rosemont Mine. Excluding the mine will not cause the species' extinction. Rosemont Mine has incurred costs well in excess of \$100 million in developing the project and should be excluded based on economic considerations.

Our response: We have not excluded the Rosemont Mine from critical habitat. See our response to comment number 71 in the *Comments from States* above.

Additionally, the Service recognizes the perceptual effects of the designation of critical habitat in general, and specifically, for the designation of critical habitat for the jaguar. The costs of developing the Rosemont Mine and the potential economic benefit of the mine are not factors in considering whether to exclude the mine area from critical habitat. The Secretary has the discretion to exclude specific areas from critical habitat based on the economic impact or other relevant factors. The basis for excluding a particular area due to a probable economic impact is to relieve the probable impact that may be due solely to the designation of critical habitat. In this particular instance for jaguar critical habitat, we find no such probable economic impact due solely to the designation of critical habitat. The Rosemont Mine area is occupied by the jaguar and, consequently, any conservation measures that have been implemented to date, or anticipated, for the jaguar are a result of the species' listing, not the designated critical habitat. Furthermore, a recently completed biological and conference opinion found the construction and operation of the Rosemont Mine would not jeopardize the jaguar nor adversely modify designated critical habitat. This

last point, no adverse modification of critical habitat, is a major determining factor in whether the Secretary would consider the exclusion of the mine area from critical habitat. Since the Service determined the proposed mining operation would not destroy or adversely modify critical habitat, no conservation measures or reasonable or prudent alternatives were suggested. Therefore, probable economic impacts forecast as the result of the designation of critical habitat are predominantly limited to transactional costs. Since the basis for an economic-based exclusion is to forego probable economic impacts, and there are limited forecast economic impacts from critical habitat, the Secretary did not choose to enter into the discretionary exclusion analysis under section 4(b)(2) of the Act. As stated previously, the costs of developing the mine and any conservation measures implemented or recommended by the Service specific to jaguar are primarily the result of the listing of the species, not critical habitat.

(113) Comment: Habitat Conservation Plans (HCPs) should not be excluded from critical habitat, specifically the Pima County Draft Multi-Species HCP and Malpai Borderlands HCP should not be excluded.

Our response: The Pima County draft Multi-Species HCP and the Malpai Borderlands HCP lack management plans that address jaguar habitat. Consequently, we have not determined that the benefits of excluding these areas outweigh the benefits of including these areas.

(114) Comment: The Service should include all of the "Sky Islands" within the designation including the Chiricahua, Dos Cabezas, Dragoon, Mule, Rincon, Santa Catalina, Galiuro, Winchester, Whitlock, Pinaleno, Santa Teresa, Animas, Pyramid, Alama Hueco, Big Hatchet, Little Hatchet, Florida, West and East Potrillo, Cedar, and Big Burro Mountains, and portions of the Peloncillo Mountains north of the current boundaries of the Northwestern Recovery Unit. These areas should be included because they either have documented jaguar presence or they contain the PCEs as defined by the Service. The Service should also include areas north of the current proposed critical habitat in the Mogollon Rim area (along with adjoining spurs and canyons, including the Grand Canyon) in Arizona and to the north and east into the contiguous lands of the Gila National Forest along with the Plains of San Augustin, the Zuni Plateau, the El Malpais National Monument and National Conservation Area, and the San Mateo, Magdalena,

Chupadera, Datil, Sawtooth, Luera, and Summit Mountains in New Mexico. These areas represent a potentially vital refugium for the northern jaguar population, given the expected trajectory of increasing land use and climate change across the southwestern United States and northern Mexico.

Our response: The additional Sky Islands and areas north of the designated critical habitat area may be usable by jaguars and may in fact contribute to the recovery of the species, but they are not considered occupied at the time of listing, and are not considered essential to the conservation of the species as unoccupied habitat. Consequently, these areas do not meet the definition of critical habitat as we have interpreted it because they were not occupied at the time of listing nor are they considered essential to recovery. See our response to comment number 3 in *Peer Reviewer Comments* above.

(115) Comment: The Service should designate additional areas of critical habitat because the agency cannot be sure of how much habitat is currently occupied by jaguars in the United States, and lack of detection does not indicate the species is absent. With few exceptions, the relatively large number of confirmed jaguar sightings on which the proposed rule was based were not the result of any official effort to conduct a comprehensive survey of the northern jaguar population in the United States, but were instead essentially collected accidentally. Considering the large and growing number of purely anecdotal sightings of this extremely and notoriously elusive species, it seems extremely reasonable to assume that, should anyone actually try to find jaguars in this region, far more individual jaguars would be discovered.

Our response: The Service agrees that the lack of detection does not indicate the species is absent, and we acknowledge this concept in our proposed rule and this final rule. The Service recognizes that many mobile species are difficult to detect in the wild because of morphological features (such as camouflaged appearance) or elusive behavioral characteristics (such as nocturnal activity) (Peterson and Bayley 2004, pp. 173, 175). This situation presents challenges in determining whether or not a particular area is occupied because we cannot be sure that a lack of detection indicates that the species is absent (Peterson and Bayley 2004, p. 173). See *Occupied Area at the Time of Listing*, above, in this final rule.

Additionally, jaguars are currently being surveyed for and monitored in

mountainous areas in the United States north of the U.S.-Mexico border and south of Interstate 10, from the Baboquivari Mountains in Arizona to the Peloncillo Mountains in New Mexico. Information gathered during this survey and monitoring project (up through September 11, 2013) has been incorporated into this final rule (see Table 1).

(116) Comment: The Service should follow the jaguar habitat modeling efforts of Hatten *et al.* (2005) and Robinson (2006) as a basis for including additional areas in these two States. Hatten *et al.* (2005) identified 21–30 percent of Arizona (approximately 62,000–88,600 km<sup>2</sup> (23,938–34,209 mi<sup>2</sup>)) as potential jaguar habitat, and Robinson (2006) identified approximately half of New Mexico (approximately 156,800 km<sup>2</sup> (60,541 mi<sup>2</sup>)) as potential jaguar habitat.

Our response: As discussed above, during the Jaguar Recovery Team's analysis and modeling effort, the team considered the modeling efforts of Hatten *et al.* (2005, entire) and Robinson (2006, entire), and further refined the Hatten *et al.* (2005, entire) model such that a similar model could be applied across the entire Northwestern Recovery Unit. The team provided this analysis and habitat model in their 2013 report entitled *Jaguar Habitat Modeling and Database Update* (Sanderson and Fisher 2013, entire). Therefore, we based critical habitat boundaries on the physical and biological feature and PCEs from the updated habitat modeling report, in which the habitat features preferred by the jaguar in the proposed Northwestern Recovery Unit were described based on the best available science and expert opinion of the Jaguar Recovery Team.

(117) Comment: Congress and the Service's regulations or intentions were to guide designation of critical habitat to lands that are actually occupied by the listed species. Critical habitat should be based on current occupation, not historical, and no areas are currently occupied or were occupied at the time of listing.

Our response: The Service's designation of occupied critical habitat is in compliance with the Act. Under the second part 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. In regards to areas occupied at the time of listing, see our response to comment number 9 in *Peer Reviewers*

*Comments* above and comment number 42 in *Comments from States*.

(118) Comment: The Santa Rita Mountains and Subunit 4b are not occupied.

Our response: The Santa Rita Mountains are within Unit 3. We determined Unit 3 may have been occupied at the time of listing and is currently occupied based on a record of a male shot in the Patagonia Mountains (also within Unit 3) in 1965 and multiple sightings of a male jaguar from October 2012 through September 11, 2013, in the Santa Rita Mountains (see Table 1 in the final rule). We did not designate Subunit 4b based on occupancy; rather, this unit provides connectivity from Subunit 4a to Mexico (by connecting it to Unit 3, which provides connectivity to Mexico). Connectivity to Mexico is an essential feature of jaguar habitat in the United States.

(119) Comment: The Patagonia Unit (Unit 3) is considered occupied based on only one observation of a jaguar; therefore, it should not be considered occupied.

Our response: At the time we published the proposed rule (77 FR 50214; August 20, 2012), we were aware of only one undisputed Class I jaguar record from Unit 3, which was a male shot in the Patagonia Mountains in 1965 (see Table 1 of this final rule). Since then, a male jaguar has been documented numerous times in the Santa Rita Mountains (see Table 1 of this final rule), which are also within Unit 3. Therefore, we consider this unit occupied.

(120) Comment: The use of female scat as a scent lure renders all scientific documentation of jaguars suspect.

Our response: We understand that some of the jaguar records used in our proposed rule may be disputed due to the possibility that female scat was used as a scent lure in some areas. Therefore, we removed all sightings that may have been influenced by female scat, which we determined to be from October 3, 2008 (the date of Emil McCain's request for jaguar scat from the Phoenix Zoo) through March 2, 2009 (the date Macho B was captured and flown to the Phoenix Zoo). See Table 1 of this final rule for all of the undisputed Class I jaguar records used to determine occupancy.

(121) Comment: The correct date of listing should be 1997 instead of 1972.

Our response: As discussed in the final rule, our intention was to list the species throughout its entire range at the time it was added to the Endangered Species Conservation Act in 1972;

therefore, we determine that 1972 is the date the species was listed.

(122) Comment: Occupancy should be determined based on current records, including up to the past 15 years.

Our response: Determining occupancy by a species such as the jaguar can be difficult, given that they were added to the list many years ago, and, by nature, are cryptic and difficult to detect. Therefore, we determine that the appropriate timeframe within which to consider areas occupied by the jaguar at the time of its listing is from 1962 (10 years prior to listing, which is the average lifespan of a jaguar) to September 11, 2013. See our response to comment number 42 in the *Comments from States* above.

(123) Comment: All records collected by and cited in McCain and Childs (2008) should be removed, as the use of female scat as a scent lure at some point during their study indicates that all of their data were invalid.

Our response: We disagree. We understand that some of the jaguar records used in our proposed rule may be disputed due to the possibility that female scat was used as a scent lure in some areas. Therefore, we removed all sightings that may have been influenced by female scat, which we determined to be from October 3, 2008 (the date of Emil McCain's request for jaguar scat from the Phoenix Zoo), through March 2, 2009 (the date Macho B was captured and flown to the Phoenix Zoo). Because we only have information of female scat as a scent lure potentially being used from October 2008 through March 2009, it is speculative to assume that sightings outside of this timeframe were influenced by female scat as a scent lure because the best scientific and commercial data does not indicate this to be the case. See Table 1 of this final rule for all of the undisputed Class I jaguar records used to determine occupancy.

(124) Comment: Remove "verified tracks" from consideration, as they can be confused with mountain lion tracks.

Our response: We do not consider it necessary to remove verified tracks from consideration because the tracks that are included in our determination of occupied critical habitat were verified by mountain lion hunters who have sufficient experience in distinguishing mountain lion tracks from jaguar tracks.

(125) Comment: Data used by the Service to designate critical habitat are insufficient, inaccurate, or unreliable because the habitat models developed by Sanderson and Fisher (2011, pp. 1–11; 2013, entire) used other than Class I jaguar records and disputed Class I records (including jaguar locations that

may have been from “canned” hunts). Therefore, it is not possible to determine or model the PCEs essential for jaguars.

Our response: See our response to comment number 43 in the *Comments from States* above.

(126) Comment: The 130 jaguar locations used in the Service’s August 20, 2012, proposed rule (77 FR 50214) are of questionable legitimacy.

Our response: See our response to comment number 43 in the *Comments from States* above for an explanation of the datasets used in our August 20, 2012, proposed rule (77 FR 50214), July 1, 2013, revised proposed rule (78 FR 39237), and this final rule.

(127) Comment: None of the critical habitat units contain all the PCEs essential to the conservation of the jaguar, or they do not have the PCEs in the appropriate quantities to support jaguars.

Our response: All of the critical habitat units contain all of the PCEs in the appropriate quantities to support jaguars. The PCEs are based on the latest jaguar habitat model produced by the Jaguar Recovery Team (Sanderson and Fisher 2013, entire), which is the best commercial and scientific data available. Further, all PCEs are found in all units of the final critical habitat designation and jaguars have been documented in each unit (in some cases multiple times over multiple months and years). Therefore, we conclude that all of the critical habitat units contain all of the PCEs in the appropriate quantities to support jaguars.

(128) Comment: It is not necessary to have all of the PCEs in each critical habitat unit. The Service should consider designating areas in which only some of the PCEs are present.

Our response: The Service recognizes that each critical habitat unit does not need to contain all of the PCEs; however, the Service considered the fact that this area is in the northern periphery of the jaguar’s range. Designating critical habitat only in areas with all PCEs provides the best habitat available and, therefore, critical habitat for the jaguar in the United States. Because habitat in the United States is at the edge of the species’ northern range, and is marginal compared to known habitat throughout the range, we have determined that all of the primary constituent elements discussed must be present in each specific area to constitute critical jaguar habitat in the United States, including connectivity to Mexico (but that connectivity may be provided either through a direct connection to the border or by other areas essential for the conservation of the species; see *Areas Essential for the*

*Conservation of Jaguars*, above).

Further, because the PCEs are based on recommendations from the Jaguar Recovery Team and information from the latest jaguar habitat model (Sanderson and Fisher 2013, entire), we have captured the areas in the United States that support the conservation of the jaguar.

(129) Comment: The unoccupied units (specifically Subunit 4b) lack the essential physical and biological features for critical habitat.

Our response: The Service recognizes that three designated critical habitat Subunits (1b, 4b, and 4c) do not contain all of the physical or biological features essential to the jaguar. However, under the second part of the definition of critical habitat under the Act, 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. The Act does not require the Service to identify PCEs for unoccupied areas. In areas lacking all PCEs (specifically Subunits 1b, 4b, and 4c), these areas were designated because they are essential to the conservation of the jaguar because they provide continuity to Mexico and connect Subunits within the United States that would otherwise not be connected to Mexico (Subunits 1a and 4a).

(130) Comment: Additionally, the Service failed to meet Data Quality Act (DQA) standards. The DQA attempts to ensure that Federal agencies, such as the Service, use and disseminate accurate information by requiring those agencies to issue information guidelines ensuring the quality, utility, objectivity, and integrity of the information disseminated. The information disseminated by the Service in the proposed rule fails to meet DQA standards because it is both biased and inaccurate.

Our response: See our responses to comment numbers 16 and 18 in *Peer Reviewer Comments* above.

(131) Comment: The Service must adopt “regulatory *Daubert*” by informal rulemaking to prevent further subordination of science to political policy (Holland 2008).

Our response: The commenter’s reference to *Daubert* in Holland (2008, p. 301) refers to the *Daubert v. Merrell Dow Pharmaceuticals, Inc.* case that was decided by the Supreme Court. In *Daubert v. Merrell Dow Pharmaceuticals Inc.*, the U.S. Supreme Court empowered federal judges to reject irrelevant or unreliable scientific evidence. *Daubert* provides a suitable framework for reviewing the quality of

agency science and the soundness of agency decisions consistent with the standards established for review of agency rulemakings under the Administrative Procedure Act. Holland (2008) suggests that the Act should be held to a similar information standard that was used in that case, either through adoption by Federal courts, Congressional amendment to the Act, or Executive Order. The Service has no authority to adopt information standards different than those referenced in the discussion above. These are the standards that we used in the designation of critical habitat for the jaguar.

(132) Comment: The questionnaires distributed by the Service to jaguar experts for use in developing the recovery outline for the species and the application of the Delphi Method (a structured communication technique using a systematic, interactive forecasting method which relies on a panel of experts) are scientifically invalid.

Our response: The use of questionnaires and the Delphi Method is not a scientifically invalid process. The Delphi Method can be a useful technique in solving complex natural resource issues by synthesizing expert opinion (for example, see Hess and King 2002, entire; Taylor and Ryder 2003, entire; Plummer and Armitage 2007, entire), particularly when data are lacking, there is great uncertainty, and the primary source of information is informed judgment (Hess and King 2002, p. 28). This is the case for jaguars in the northwestern-most part of the species’ range. For this reason, we determined that a modified Delphi Method (in that we sent one round instead of multiple rounds of questions to scientists with experience or expertise in jaguar ecology (primarily in the northwestern-most portion of the jaguar range) or large cat ecology) was appropriate to determine the habitat features relied on by jaguars in this area. Please see the Recovery Outline for the Jaguar for a description of this process (Jaguar Recovery Team 2012, pp. 15–16).

(133) Comment: “Data” resulting from a compilation of animals either lured here artificially by sexual scent baiting or trapped elsewhere and then released, do not support any scientific conclusion of authentic habitat and run afoul of the ethics requirements of biological science and of the Service.

Our response: The Service used the best available science to determine critical habitat for the jaguar. We understand that some of the jaguar records may be disputed due to the

possibility that female scat was used as a scent lure in some areas, or that some individuals may have been released for “canned” hunts. Therefore, we removed all sightings that may have been influenced by female scat, which we determined to be from October 3, 2008 (the date of Emil McCain’s request for jaguar scat from the Phoenix Zoo), through March 2, 2009 (the date Macho B was captured and flown to the Phoenix Zoo), and we did not use records that may have been from “canned” hunts (Johnson *et al.* 2011, p. 9). See Table 1 of this final rule for all of the undisputed Class I jaguar records used to determine occupancy.

(134) Comment: The Service has given insufficient consideration of competition for hunting territories or of availability of prey species that would occur in the critical habitat areas if jaguars were to actually inhabit the proposed critical habitat. Any increase in predator population would necessarily create an imbalance in that relationship (e.g., an increase in predator population without an increase in prey population due to expansion of jaguar population).

Our response: The designation of critical habitat does not increase the number of jaguars present in the United States. Designated 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. As discussed in the proposed rule and this final rule, the purpose of designating critical habitat in the United States is to provide areas for transient jaguars (with possibly a few residents) to support the nearest breeding area to the south in Mexico, allowing this population to expand and contract, and, ultimately, recover. It is our intent that the designation of critical habitat will protect the functional integrity of the features essential for jaguar life-history requirements for this purpose into the future.

(135) Comment: The range of HII included in the Service’s August 20, 2012, proposed rule is too restrictive and should be increased. The primary constituent elements of jaguar critical habitat should include areas with an HII of up to 30, if not more.

Our response: The range of HII included in this final rule (less than 20) is appropriate. To the greatest extent possible, we have based jaguar critical habitat, including the PCE for HII, on information compiled and produced by the Jaguar Recovery Team. The Jaguar

Recovery Team comprises jaguar experts, large-cat experts, and stakeholders from the United States and Mexico; therefore, we consider that the work produced by the team is the best available scientific and commercial data, and that following the team’s recommendations is the best avenue to conservation of the species and by extension designating critical habitat. Therefore, we have incorporated the team’s recommendation for HII in the northern portion of the proposed Northwestern Recovery Unit as a PCE for jaguar critical habitat.

(136) Comment: In developing the PCE of human influence, the Service assumes that human influence has not changed over the time period of jaguar records used in the analysis. Clearly human population density, the location and traffic density of major roads, and the extent of stable nighttime lighting (three examples of human influence on which this PCE is based), have changed over the last century. By using the HII GIS layer, the Service could grossly miscalculate the habitat characteristics associated with jaguar locations from the early to mid-20th century, including overestimating the degree of human influence that jaguars prefer. The Service should use historical records to estimate human influence associated with jaguar locations throughout the 20th century. Without a proper correction for temporal variation in HII, the GIS approach taken by the Service to develop and map PCEs is fundamentally flawed and inappropriate.

Our response: The Service recognizes the temporal variation in human influence over the time period of jaguar records used in the analysis. However, as stated previously, the Act requires the Service to use the best scientific and commercial data available. Data pertaining to the variation of human influence from 1962 to present is lacking.

(137) Comment: The Service does not account for the high level of current and historic human activity within the northern Santa Rita Mountains. As a result of mining operations in the Greaterville, Rosemont, and Helvetia areas, the areas surrounding the proposed Rosemont Project have been subject to relatively high levels of human activity for over one and a half centuries. Given the close proximity of the northern Santa Rita Mountains to the second largest metropolitan area in Arizona and the area’s proximity to State Highway 83, the area currently receives heavy human use. In particular, the areas within and surrounding the Rosemont Project do not contain the

necessary PCE associated with low human influence, and thus should not be included in the proposed designation of critical habitat for jaguar.

Our response: We understand there may be discrepancies due to the mapping scale of HII (1 km<sup>2</sup> (0.4 mi<sup>2</sup>)), and have accounted for this in the textual exclusion of paved or developed areas that may have been included in the critical habitat boundary because of this scale. However, overall HII is the best available science consistently and objectively reflecting human influence on the landscape, and therefore we continue to use it as the data source for the human influence PCE. The critical habitat designation consists entirely of rural lands, in variously low levels of development and population density. All the units are in counties with population densities lower than their statewide average, with the exception of Pima County, which includes the city of Tucson.

(138) Comment: If the Service designates critical habitat, a de facto wilderness will be created and people and activities will be excluded from critical habitat.

Our response: Designated critical habitat does not create a wilderness area, reserve, or otherwise protected area. Humans and legal activities are not excluded from designated critical habitat. Legal activities that have a Federal nexus (in that they occur on Federal lands, require a Federal permit, or receive Federal funds) will be evaluated on a case-by-case basis with respect to section 7 (consultation with the Service) of the Act to ensure they do not destroy or adversely modify designated critical habitat.

(139) Comment: Human influence appears to be above the defined threshold within the proposed rule in the northern Santa Rita Mountains and should not be included in the proposed designation of critical habitat for the jaguar. The GIS layer identified in the jaguar habitat model entitled “Human Footprint,” available from Socioeconomic Data and Applications Center, does not fit the description provided in the proposed rule as it is not a relative index normalized by biome and its scores range from 0 to 64. When brought into a GIS, the Human Footprint layer (which fits the description provided in the proposed rule) clearly demonstrates that human influence is high across a large area proposed as critical habitat, including all of the northern Santa Rita Mountains and the entirety of the Rosemont Project located within the proposed designation, as well as Subunit 4b. Thus, according to the thresholds set

forth by the proposed rule, the northern Santa Rita Mountains and the areas within and surrounding the Rosemont Project should not be included in the proposed designation as they do not include the necessary PCEs.

Our response: In our August 20, 2012, proposed rule (77 FR 50214), we incorrectly identified the Human Footprint (which is measured on a scale of 0–100) available through Socioeconomic Data and Applications Center as the GIS layer used to evaluate human influence. We did not use the Human Footprint data, but rather the Human Influence Index (which is measured on a scale of 0–64). The Human Influence Index is the data layer used in both jaguar habitat models developed by Sanderson and Fisher (2011, p. 7; 2013, p. 6) and used to designate critical habitat for the jaguar. We have corrected this final rule to reflect the appropriate data layer.

The Service utilized the Human Influence Index GIS layer, which is based on eight input layers (human population density, railroads, major roads, navigable rivers, coastlines, stable nighttime lighting, urban polygons, and land cover) to describe a relative index of human influence on the land. This GIS layer is available from the Socioeconomic Data and Applications Center hosted by the Center for International Earth Science Information Network at Columbia University (<http://sedac.ciesin.columbia.edu/data/collection/wildareas-v2/sets/browse>). Please see our response to comment number 43 for a comprehensive list of all data sources we used in our analysis.

(140) Comment: Because approximately 35 percent of the areas proposed as critical habitat are non-federal lands, many of the areas currently associated with high human influence could experience additional human impacts from future development. Critical habitat affords no protection to actions on private or state lands that do not require federal actions, and thus does little to alleviate this problem. Because of the importance placed on the PCE of low human influence by the proposed rule, areas currently associated with high human influence should not be included in the proposed designation.

Our response: We have not included areas within critical habitat with high human influence. In the proposed rule and this final rule we have identified an HII of less than 20 as an essential PCE of critical habitat. We understand there may be discrepancies in some cases due to the mapping scale of HII (1 km<sup>2</sup> (0.4 mi<sup>2</sup>)), and we have accounted for this in the textual exclusion of paved or

developed areas that may have been included in the critical habitat boundary because of this scale.

We understand that additional human impacts from future development on private or State lands could occur. However, critical habitat does afford some protection to the jaguar through section 7 consultation under 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. 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 role for the species. Therefore, actions that are funded, permitted, or carried out by a Federal agency within jaguar critical habitat will continue to be evaluated to determine their impacts on critical habitat.

(141) Comment: Climate change is a factor affecting jaguar adaptation and conservation, and the Service should include lands at higher elevations and latitudes in the critical habitat designation. The Service should consider that climate change will force species, such as jaguars, to migrate north, and designating critical habitat for the jaguar in the United States is necessary.

Our response: The Service considered numerous scientific information sources as cited in our proposed rule and this final rule. The Service agrees that the best available scientific information shows unequivocally that the Earth's climate is currently in a period of unusually rapid change and the impacts of that change are already occurring (National Fish, Wildlife, and Plants 2012, p. 9). The Service recognizes that some species are shifting their geographic ranges, often moving poleward or upwards in elevation (National Fish, Wildlife, and Plants 2012, p. 10). Range shifts are not always negative: Habitat loss in one area may be offset by an increase elsewhere such that if a species is able to disperse, it may face little long-term risk. However, it is clear that shifting distributions can lead to a number of new challenges (National Fish, Wildlife, and Plants 2012, p. 26). The synergistic implications of climate change and habitat fragmentation are the most threatening facet of climate change for biodiversity (Hannah and Lovejoy 2005, p. 4). The Service acknowledges in the proposed rule and this final rule that

climate change has the potential to adversely affect the jaguar within the next 50 to 100 years (Jaguar Recovery Team 2012, p. 32). However, the degree to which climate change will affect jaguar habitat in the United States is uncertain. Further, we do not know whether the changes that have already occurred have affected jaguar populations or distribution, nor can we predict how the species will adapt to or be affected by the type and degree of climate changes forecast. Consequently, because the specific impacts of climate change on jaguar habitats remains uncertain at this time, we did not recommend that any areas be designated as critical habitat specifically to account for the negative effects of climate change.

(142) Comment: It is inappropriate for the Service to address climate change within the critical habitat designation area for the jaguar because of the lack of data or accurate down-scaled climate modeling. Climate change information from the IPCC is flawed; therefore, the Service should not consider it.

Our response: See our response to comment number 59 in *Comments from States* above.

(143) Comment: The Service received multiple comments regarding climate change. Some thought there was not sufficient information on climate change for the Service to determine impacts to the jaguar. Others thought that there is more than enough information on impacts from climate change, which the Service did not adequately consider.

Our response: 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 reviewed all available information pertaining to climate change and the jaguar, but climate change data specific to jaguars or similar species is scarce. The Service recognizes that the best available scientific information shows unequivocally that the Earth's climate is currently in a period of unusually rapid change and the impacts of that change are already occurring (National Fish, Wildlife, and Plants 2012, p. 9). However, because the specific impacts of climate change on jaguar habitats remain uncertain at this time, we did not recommend any areas be designated as critical habitat specifically to account for the negative effects of climate change. Please see our response to comment number 33 in *Peer Reviewer Comments* above.

(144) Comment: The Service should not consider climate change because it is not certain to occur, or may not occur to the severity that is predicted by experts.

Our response: Please see our response to comment number 59 in *Comments from States* above.

(145) Comment: Clarify if highways and the City of Sierra Vista were excluded from critical habitat designation.

Our response: Yes, these areas are not included in the critical habitat designation. When determining critical habitat boundaries within this final rule, we made every effort to avoid including developed areas such as lands covered by buildings, pavement, roads, cities, and other structures because such lands lack physical or biological features for jaguars. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Any such lands inadvertently left inside critical habitat boundaries shown on the maps of this final rule have been excluded by text in the rule and are not designated as critical habitat. Therefore, a Federal action involving these lands will not trigger section 7 consultation with respect to critical habitat and the requirement of no adverse modification unless the specific action would affect the physical or biological features in the adjacent critical habitat.

(146) Comment: The Service did not adequately analyze whether or not critical habitat areas would require special management of the physical and biological feature and PCEs. Areas that are managed in a way that maintains the physical or biological features essential to the species do not meet the statutory definition of critical habitat and, therefore, are not eligible to be designated as critical habitat. The proposed rule does not contain these findings. Instead, the proposed rule contains broad generalizations regarding threats to the species and pronounces that special management is needed to address the threats without assessing whether existing protections are adequate.

Our response: The Act does not require that the Service evaluate the inadequacy of existing regulatory mechanisms for critical habitat designation. The Act requires the Service to analyze this factor to determine whether a species is endangered or threatened. Under the Act critical habitat is defined as the geographical area occupied by the species at the time of listing that contains those physical or biological features that: are essential to the conservation of the species and which “may” require “special management” considerations or protection. It does not state that critical habitat contain those

physical or biological features where “additional” special management is “needed”. In *Center for Biological Diversity v. Norton*, 240 F. Supp. 2d 1090 (D. Ariz. Jan. 13, 2013), the court stated that the fact that habitat is already under some sort of conservation management indicates that such habitat is critical. Therefore, special management considerations or protection of the habitat features comprising jaguar critical habitat may be necessary.

(147) Comment: Special management of jaguar critical habitat is not required because of the cooperative management efforts and achievements of the Jaguar Conservation Team. Additionally, the Arizona Game and Fish Department and New Mexico Department of Game and Fish, with assistance from the Service and other cooperators, have already carefully crafted a Memorandum of Understanding and Conservation Framework to maintain the jaguar’s core commitments in several areas of conservation; therefore, no special management is required.

Our response: We appreciate and acknowledge the work conducted by the Jaguar Conservation Team and the States since 1997. However, as stated in our response to comment number 60 in *Comments from States* above and comment number 146 in *Public Comments* above, special management considerations or protection of the habitat features comprising jaguar critical habitat may be necessary.

(148) Comment: Special management along the border could be waived to address national security issues.

Our response: We understand that laws related to the expeditious construction of border infrastructure in areas of high illegal entry may be waived by the Secretary of DHS, and we have discussed this issue in the *Special Management Considerations or Protections* section of this final rule. As also noted in this final rule, we know of no plans to construct additional security fences in the designated critical habitat, although should future national security issues require additional measures, the Secretary of DHS may invoke the waiver, and special management considerations would continue to occur on a voluntary basis on activities covered by a waiver. Other forms of border infrastructure, however, do not fall under this waiver (construction of towers, for example); therefore, special management considerations apply to these projects, and we consult with DHS to minimize the impacts to listed species and their critical habitat.

(149) Comment: McCain and Childs (2008) misstate the total number of

jaguar records in the United States, incorrectly calculate percentages based on these records, and improperly round their results to create the false illusion of an extinction crisis in the United States.

Our response: We disagree. We have reviewed McCain and Childs (2008) and did not find there to be misstatements and miscalculations in the report. Additionally, McCain and Childs (2008) is a peer-reviewed article published in a reputable journal (*Journal of Mammalogy*). Therefore, we continue to utilize information in this article as some of the best available science.

(150) Comment: The recovery outline for the jaguar states that water for jaguars must be made available within 10 km (6.2 mi) year round for “high quality” jaguar habitat to exist in the American Southwest and within 20 km (12.4 mi) by use of this rule everywhere else in the area proposed as critical habitat for jaguar. This water requirements for jaguars described in the proposed rule raise water resources issues that require active cooperation between the Service and local governmental entities to resolve in concert with the development of critical habitat for the jaguar under section 2(c)(2) of the Act. The Service has refused, and is continuing to refuse, to resolve water resource issues associated with the designation of critical habitat for jaguar.

Our response: We recognize our responsibilities under section 2(c)(2) of the Act to cooperate with State and local agencies to resolve water resource issues in concert with conservation of endangered species, such as the jaguar. We look forward to working with the water resource agencies to resolve any such issues. However, this cooperation is, for the most part, independent of our requirement under section 4(a)(3)(A) of the Act to designate critical habitat for the jaguar. Impacts to water management and resource activities are not expected to be controversial because, as discussed in the analysis of impacts on water resources, the constraints on current water management activities are expected to be limited (Mangi Environmental Group 2013).

(151) Comment: Executive Order 13563 of January 18, 2011 (Improving Regulation and Regulatory Review), explicitly states that our “regulatory system must protect public health, welfare, safety, and our environment while promoting economic growth, innovation, competitiveness, and job creation.” Consistent with this mandate, Executive Order 13563 requires agencies to tailor “regulations to impose the least

burden on society, consistent with obtaining regulatory objectives.” It also requires agencies to “identify and consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice” while selecting “those approaches that maximize net benefits.” To the extent permitted by law, our regulatory system must respect these requirements.

Our response: We have followed, and will continue to follow, the directives in Executive Order 13563. As part of the process to designate critical habitat, we have completed an economic analysis on the potential incremental impacts of the designation. Critical habitat only affects Federal actions through a requirement to consult on those actions that may affect critical habitat to ensure they do not adversely modify critical habitat.

(152) Comment: Lands within the critical habitat areas already have land protection due to Federal or Tribal ownership or local land management plans. In contrast, we also received comments stating that the lands within critical habitat areas are not protected adequately for jaguar conservation.

Our response: We recognize that some lands within the designation are already being managed for conservation purposes that provide some benefits to the jaguar. Section 4(b)(2) of the Act states the Secretary may exclude an area from critical habitat if she determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless she 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 Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor. In the proposed rule we acknowledge that some areas within the proposed designation are included in management plans or other large-scale habitat conservation plans including the Forest Service, National Park Service, Fish and Wildlife Service refuge, Bureau of Land Management, Malpai Habitat Conservation Plan, Pima County’s Draft Multi-Species HCP, State Wildlife Action Plans, and Jaguar Conservation Agreements between the Arizona Game and Fish Department and New Mexico Department of Game and Fish. However, these plans do not specifically address jaguar habitat.

In the proposed rule we noted that we were considering exempting Fort Huachuca and excluding the Tohono O’odham Nation. We have reviewed the comments from the public on these

matters. We have determined that the benefits of excluding the Tohono O’odham Nation outweigh the benefits of inclusion. In regards to Fort Huachuca, the Service has exempted Fort Huachuca from critical habitat designation based on their INRMP. See the *Exemptions* and *Exclusions* sections of this final rule for additional information.

(153) Comment: The jaguar is already protected in the United States by both Federal and State laws.

Our response: The jaguar does already receive some protection under the Act as a Federally listed species. However, the Service has determined that designation of critical habitat for the jaguar is prudent and determinable based on the best available scientific data available. Section 4(a)(3)(A) of the Act states that critical habitat shall be designated for endangered and threatened species to the maximum extent prudent and determinable. Therefore, we are required to designate critical habitat for the jaguar to fulfill our legal and statutory obligations. See our response to comment number 1 in the *Peer Reviewer Comments* above. Further, critical habitat does afford protection to the jaguar through section 7 consultation under 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. 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 role for the species. Therefore, actions that are funded, permitted, or carried out by a Federal agency within jaguar critical habitat will continue to be evaluated to determine their impacts on critical habitat.

(154) Comment: The primary threat to jaguars is through hunting and other activities that “take” individuals, not habitat fragmentation.

Our response: As discussed in the *Special Management Considerations or Protections* section of this final rule, there are threats to the physical or biological feature essential to the conservation of jaguar habitat that may require special management. Jaguar habitat and the features essential to their conservation are threatened by the direct and indirect effects of increasing human influence into remote, rugged areas, as well as projects and activities that sever connectivity to Mexico. In the past, the primary threat to jaguars in the

United States was illegal shooting (see listing rule for a detailed discussion); however, this is no longer accurate, as the most recent known shooting of a jaguar in Arizona was in 1986 (Brown and Lopez González 2001, p. 7). Please see the 1997 clarifying rule (62 FR 39147; July 22, 1997) and the Recovery Outline for the Jaguar (Jaguar Recovery Team 2012, entire) for more information about threats to jaguars.

(155) Comment: The designation of private lands as critical habitat will affect private property rights. Specifically, designated critical habitat will limit the use and enjoyment of the property, impact ongoing maintenance and improvement, limit or modify ranching practices, and curtail other legal uses of the property. Designating critical habitat for the jaguar will result in regulatory takings of an individual’s livelihood and, ultimately, his or her property.

Our response: As stated in our proposed rule, the Service has followed Executive Order 12630 (“Government Actions and Interference with Constitutionally Protected Private Property Rights”). The designation of jaguar critical habitat is not anticipated to have significant takings implications for private property rights. As discussed in the Critical Habitat section of this final rule, the designation of critical habitat affects only Federal actions. Critical habitat designation does not affect landowner actions that do not require Federal funding or permits, nor does it preclude development of habitat conservation programs or issuance of incidental take permits to permit actions that do require Federal funding or permits to go forward. Due to current public knowledge of the species’ protections and the prohibition against take of the species both within and outside of the proposed areas, we do not anticipate that property values would be affected by the critical habitat designation. Our economic analysis for proposed critical habitat designation found only limited incremental impacts of the designation and extremely small impacts on activities on private lands.

(156) Comment: It was inappropriate to use roads as a natural boundary to designate jaguar critical habitat.

Our response: We did not use roads as a natural boundary to designate critical habitat. Instead, critical habitat units are defined by the PCEs around which they are based, one of which includes roads as part of the human influence on the landscape (the Human Influence Index), but the use of roads in the definition of critical habitat units is only to give context to the location of the unit, not as the official unit

description. See the maps for the official boundaries themselves.

(157) Comment: The Service should acknowledge that new jaguar observations within the United States could lead to revisions in the designation of critical habitat.

Our response: We acknowledge that the Act authorizes the Service to make revisions to designated critical habitat. If in the future the best available information at that time indicates revision of critical habitat is appropriate, and if resources are available we may revise this critical habitat designation.

(158) Comment: The Service incorrectly stated that jaguars in the United States and northwestern Mexico represent the northernmost extent of the jaguar's range, with populations persisting in distinct ecological conditions demonstrated by xeric (extremely dry) habitat that occurs nowhere else in the species' range (Sanderson *et al.* 2002, entire). Sanderson *et al.* (2002, p. 64) does briefly mention the persistence of the populations in arid regions in Sonora, but also identifies areas in Venezuela and Brazil as xeric habitat that jaguars currently inhabit (Sanderson *et al.* 2002, Table 2). The populations in Venezuela and Brazil have shorter and more numerous corridors to connect populations in this area, thus facilitating gene flow. This contradicts the Service's assertion that jaguars in the United States are important sources of genetic resources, and, therefore, connectivity to Mexico is essential to the conservation of the jaguar.

Our response: We have modified this language in this final rule. See the *Jaguar Recovery Planning in Relation to Critical Habitat* section above in this final rule.

(159) Comment: The Service provided no evidence that population genetic resilience or persistence will be improved for jaguars by designating critical habitat in the United States. No empirical evidence was presented in the proposed designation that jaguars observed in the United States represent a genotype different from the closest breeding population of jaguars 209 km (130 miles) to the South in Mexico.

Our response: As described in this final rule, jaguars in the United States and northwestern Mexico represent the northernmost extent of the jaguar's current range, representing a population persisting in one of only four distinct xeric (extremely dry) habitats that occur within the species' range (Sanderson *et al.* 2002, Appendix 1). We did not determine that jaguars in the United States represented a different genotype

than those from the closest breeding population in Mexico; rather, jaguars in the United States are likely dispersing from the nearest breeding population in Mexico, and the conservation role or value of jaguar critical habitat is to provide areas to support these individuals during transient movements by providing patches of habitat (perhaps in some cases with a few resident jaguars), and as areas for cyclic expansion and contraction of the nearest core area and breeding population in the Northwestern Recovery Unit.

(160) Comment: The critical habitat designation and the direction outlined in the Recovery Outline relies on connectivity to Mexico for the recovery of jaguars, but this connectivity may be impacted by current and potential future border security efforts, primarily efforts to secure the international border with Mexico through the use of various types of fencing, towers, lighting, and roads. The Service incorrectly presumes that border security infrastructure will not continue.

Our response: We acknowledge that there may be some potential impacts related to border security infrastructure and maintaining habitat connectivity for jaguars between the United States and Mexico. However, as indicated in the proposed rule and this final rule, there are critical habitat areas that are not impacted by existing border infrastructure and which continue to provide habitat connectivity to Mexico. These areas are typically very steep and rugged and not conducive to the construction of fences or roads. We do not anticipate that additional fencing or roads will be constructed in designated critical habitat due to the prohibitive cost and engineering constraints. If such projects are proposed, the designation of critical habitat will provide a regulatory layer of evaluation that will allow us to work with Federal agencies and landowners to resolve issues related to border security, but also ensure that the elements of jaguar critical habitat are maintained and functioning to the extent that the law allows, and that will facilitate cross-border movements by jaguars.

(161) Comment: Critical habitat designation along the U.S.-Mexico border is in conflict with national security and continued border security efforts and is not prudent. It appears that the Service wants to stop the Border Patrol from protecting our borders, restrict or completely halt road widening and construction of roadways, powerlines, pipelines, etc., and restrict or completely halt all mineral extraction and mining.

Our response: We do not anticipate that the designation of critical habitat for the jaguar will prevent the implementation of solutions that address national security. Further, environmental laws and regulations related to the expeditious construction of border infrastructure in areas of high illegal entry may be waived by the Secretary of DHS. We will continue to comply with directives related to border security and work with the Federal agencies involved in border security through existing processes, including section 7 consultation. If the consideration of environmental laws and regulations is waived in order to address national security, we will continue to work with the Federal agencies to incorporate measures into infrastructure design and construction that will avoid or minimize effects of these actions on jaguar habitat connectivity. In regards to the designation of critical habitat not being prudent, see our response to comment number 1 in the *Peer Reviewer Comments* above.

(162) Comment: Existing agreements, such as the Memorandum of Understanding (MOU) between the Coronado National Forest (CNF) and Customs and Border Protection (CBP), are adequate to resolve environmental issues and reduce impacts to national security, and there is no need for the designation of critical habitat for the jaguar.

Our response: Based on the best available scientific data available, the Service has determined that designation of critical habitat for the jaguar is prudent and determinable. See our response to comment number 1 in the *Peer Reviewer Comments* above.

(163) Comment: The Service should not exclude mining claims from critical habitat. The Service should forbid mining within critical habitat. All PCEs (and particularly connectivity to Mexico) will be impacted by mining, causing further habitat fragmentation.

Our response: We are not excluding mining claims from critical habitat. Under section 4(b)(2) of the Act, we may exclude an area from designated critical habitat based on economic impacts, impacts on national security, or any other relevant impacts. See our response to comment number 64 above in *Comments from States* for discussion on exclusions, and see our response to comment number 71 in *Public Comments* for discussion on excluding the Rosemont Mine. Rather, all projects with a Federal nexus proposed within jaguar critical habitat in the United States will be evaluated on a case-by-

case basis with respect to section 7 of the Act.

The conservation value of the Rosemont Mine area is important to the jaguar for maintaining connectivity with the other critical habitat units and with Mexico. Regarding the Hermosa project, although it is too early to begin a section 7 consultation because the project is still in the early planning stages, the economic impacts are expected to be much the same as for Rosemont Mine. The Hermosa project is in the same occupied unit and, therefore, incremental costs are expected to be low. The conservation value of this area for the jaguar may be even greater than for the Rosemont area because the Hermosa project is only 9 miles north of the U.S.-Mexico border, meaning that this area is very important for maintaining connectivity to Mexico.

Unlike more permanent habitat alterations such as building construction and asphalt paving, mines are temporary habitat disturbances and their effects can be mitigated following their economic lifespan. The economic life of Rosemont Mine is forecast to be 21 years, after which time conservation measures such as restoration of surface springs and revegetation of the mine reclamation area would take place. The Rosemont Mine area of critical habitat can be an important tool for promoting conservation of the jaguar and will continue to have conservation value for the species post-reclamation.

(164) Comment: The essential element of water within 20 km (12.4 mi) of each other is not met without relying on livestock water tanks created on ranch lands.

Our response: We acknowledge that in some cases water sources may be stock tanks, which may be used by any number of wildlife, including jaguars. Many stock tanks, however, are not included in the USGS NHD data layer, and other sources of water are available across the landscape, as well. We also understand that the availability of water across the landscape during the year is variable, based on a variety of climatic factors and ranch management practices. Even with the variability, and the fact some water sources may be provided by stock tanks, the best available scientific data provided by the USGS NHD data layer indicates that there is sufficient water available for jaguars within the final critical habitat designation.

(165) Comment: Jaguars and livestock ranching are not compatible.

Our response: The jaguar is already present in the United States (see Table 1 in this final rule) and protected under the Act as a listed species. Designation

of critical habitat does not change the status of the species, nor does it imply that we are proposing to introduce jaguars into these areas or that critical habitat is being designated with the expectation that a jaguar population will eventually reside in these areas. As discussed in the proposed rule and this final rule, the purpose of designating critical habitat in the United States is to provide areas for transient jaguars (with possibly a few residents) to support the nearest breeding area to the south, allowing this population to expand and contract, and, ultimately, recover. It is our intent that the designation of critical habitat will protect the functional integrity of the features essential for jaguar life-history requirements for this purpose into the future.

In terms of cattle depredation due to jaguars, we understand this may occur, and are aware of one recent (2007) jaguar depredation event in the United States in the Altar Valley area (McCain and Childs 2008, pp. 4–5). The designation of critical habitat does not alter or increase this possibility. We are aware, however, of the concern that cattle depredations may occur in the future, and we are working with the Jaguar Recovery Team to develop strategies to avoid these types of conflicts. We will include these strategies and actions in the draft Recovery Plan for the Jaguar.

In addition, 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. See the Critical Habitat section of this final rule for further information on critical habitat designation.

(166) Comment: The Service should increase the range of canopy cover used to delineate critical habitat (which was 3–40 percent in the proposed rule).

Our response: In the revised rule and this final rule the Service increased the range of canopy cover to greater than 1 to 50 percent tree cover. Sanderson and Fisher (2011, p. 7; 2013, pp. 5–6) also added a digital layer to capture canopy cover (called land cover in the reports), as represented by a digital layer called

tree cover. In the latest version of the model (version 13), Sanderson and Fisher (2013, p. 20) analyzed the tree cover preferred by jaguars in the Jalisco Core Area (the southernmost part of the Northwestern Recovery Unit) separately from tree cover in all other areas (note that p. 15 of this report incorrectly states that the Sinaloa Secondary Area is included with the Jalisco Core Area in this analysis) to reflect the major habitat shift from the dry tropical forest of Jalisco, Mexico, to the thornscrub vegetation of Sonora, Mexico. The results of these analyses indicate that jaguars in the southernmost part of the Northwestern Recovery Unit (the Jalisco Core Area) seem to inhabit a wider range of tree cover values (greater than 1 to 100 percent), whereas jaguars throughout the rest of the Northwestern Recovery Unit (including the United States) appear to inhabit a narrower range of tree cover values (greater than 1 to 50 percent) (Sanderson and Fisher, p. 20).

(167) Comment: The designation should include biotic communities other than Madrean evergreen woodland and semidesert grassland.

Our response: To define the physical and biological features required for jaguar habitat in the United States, we are relying on information provided by the Jaguar Recovery Team, which we consider the best available science. This information was provided in two habitat modeling reports, Sanderson and Fisher (2011, pp. 1–11) and Sanderson and Fisher (2013, entire). Additionally (and as also described in our response to comment number 43 in *Comments from States* above), the Service analyzed a subset of recent, highly accurate jaguar locations from Mexico and the United States to determine if filtering the observations in this way would influence the frequency that these observations occurred across the range of habitat variables.

As described in our response to comment number 43 in *Comments from States* above, the results of our additional analysis indicate that the overall pattern in frequency of jaguar observations using these highly accurate locations relative to the habitat variables is similar to the patterns observed using the entire data set used for version 13 of the habitat model (Sanderson and Fisher 2013, entire). Specifically related to tree cover and biotic communities, 95 percent of these highly accurate locations are found in greater than 1 to 50 percent tree cover (for all jaguar observations except those in the southernmost part of the Northwestern Recovery Unit), and, within the United States, 95 percent (of the 44 locations

total within the United States) are within Madrean evergreen woodland (43 percent) and semidesert grassland (52 percent). Therefore, we determine that a tree cover of greater than 1 to 50 percent, and biotic communities described as Madrean evergreen woodland and semidesert grassland, comprise the vegetation PCE of the physical or biological feature for jaguar critical habitat.

(168) Comment: The Service should include higher elevation areas as critical habitat.

Our response: As described in this final rule, we did not include areas higher than 2,000 m (6,562 ft) in elevation because information provided by the Jaguar Recovery Team, which we consider the best available science, indicates that areas above 2,000 m (6,562 ft) do not provide jaguar habitat, as only 3.3 percent (15 of 453) of the observations utilized in the most recent jaguar habitat modeling effort occur above this elevation (Sanderson and Fisher 2013, pp. 19, 29; note that p. 19 incorrectly states 20 observations above 2,000 m (6,562 ft) instead of 15, and Table 1.3 incorrectly states 452 jaguar observations total instead of 453). Consequently, our revised proposed rule and this final rule include an upper-elevation limit of 2,000 m (6,562 ft) to define jaguar critical habitat.

(169) Comment: Habitat conditions associated with jaguar locations may be inaccurate because the jaguar may have been chased to that location during a hunting event, and, therefore, the location may not represent the habitat in which it was residing.

Our response: The Service has used the best scientific and commercial data available as required by the Act. As described above, we determine that the range of tree cover included in the latest habitat model (Sanderson and Fisher 2013, entire) is not unreliable, and that the biotic communities of Madrean evergreen woodland and semidesert grassland provide the best, and, therefore, essential, jaguar habitat within the United States. See our response to comment number 43 in *Comments from States* above.

(170) Comment: Habitat conditions associated with jaguar locations may be inaccurate because we did not account for the temporal variation in habitat conditions across the timeframe of detections, and that we instead assume that current habitat characteristics of jaguar locations (such as canopy cover) are exactly the same as the characteristics present at the time of detection, whereas they likely are not. The Service should use Turner *et al.* (2003) as a reference for changes in

vegetation characteristics in portions of the Southwest over time.

Our response: We investigated Turner *et al.* (2003), and, while informative, a method for consistently and objectively determining and mapping the temporal vegetation changes across the entirety of southern Arizona and southwestern New Mexico is not provided. Additionally, see our response to comment number 43 in *Comments from States* above.

(171) Comment: Habitat conditions associated with jaguar locations may be inaccurate because we excluded 30 percent of the 333 occurrences to find that 70 percent were in areas of 3 to 60 percent tree cover.

Our response: See our response to comment number 43 in *Comments from States* above.

(172) Comment: The Service should expand the categories of ruggedness considered as critical habitat to include more level and extremely rugged areas. Specifically, Sanderson and Fisher (2011) graphically depict approximately 112 occurrence records in areas of “level,” “nearly level,” and “slightly rugged” terrain, which is more than half of the approximately 208 occurrences in “intermediately,” “moderately,” and “highly” rugged terrain.

Our response: We determine that the range of terrain ruggedness categories included in the latest habitat model (Sanderson and Fisher 2013, entire) accurately reflects the best, and, therefore, critical, jaguar habitat in the United States. See our response to comment numbers 43 and 63 in *Comments from States* above.

(173) Comment: The Service should exclude areas within 6.5 km (5 miles) of a well-used road rather than 4.5 km (2.8 miles) as discussed in the proposed rule.

Our response: The Service did not use an exclusion area of 6.5 km (5 miles) or 4.5 km (2.8 miles) around well-used roads in the proposed rule, and we are not using such parameters in this final rule. In the proposed rule we evaluated the best available scientific data, including Zarza *et al.* (2007, pp. 107, 108), which reported that towns and roads had an impact on the spatial distribution of jaguars in the Yucatan peninsula, where jaguars used areas located more than 6.5 km (4 mi) from human settlements and 4.5 km (2.8 mi) from roads. However, we did not use this data to develop our PCE for human disturbance. The Service identified a PCE characterized by minimal to no human population density, no major roads, or no stable nighttime lighting over any 1 km<sup>2</sup> (0.4 mi<sup>2</sup>) area. This is based on the HII used in the habitat

model developed by Sanderson and Fisher (2011, pp. 5–11, 2013 p. 6). In the latest version of the habitat model (Sanderson and Fisher 2013, entire), jaguar habitat was partly defined by an HII of less than 20 in the northernmost part of the Northwestern Recovery Unit. Additionally (and as also described in our response to comment number 43 in *Comments from States* above), the Service analyzed a subset of recent, highly accurate jaguar locations from Mexico and the United States to determine if filtering the observations in this way would influence the frequency that these observations occurred across the range of habitat variables.

(174) Comment: Future roads and transmission lines could cause habitat fragmentation.

Our response: The Service recognizes that an increase in road density and human settlements tends to fragment habitat and isolate populations of jaguars and other wildlife (Noss *et al.* 1996 and Carroll *et al.* 2001, as cited by Menke and Hayes 2003, p. 12). However, in our economic analysis, no major roads or transmission lines were identified within jaguar critical habitat. Further, future road and transmission lines with a Federal nexus proposed within jaguar critical habitat in the United States will be evaluated on a case-by-case basis with respect to section 7 of the Act.

(175) Comment: Critical habitat units that are to provide continuous habitat within the United States and subunits that are to provide connectivity to Mexico are crossed by roads with high traffic volumes and do not meet the Service's PCEs.

Our response: The Service recognizes that jaguar critical habitat contains roads; however, the presence of roads does not preclude an area from meeting PCE 7, pertaining to human influence. PCE 7 is characterized by minimal to no human population density, no major roads, or no stable nighttime lighting over any 1 km<sup>2</sup> (0.4 mi<sup>2</sup>) area. The PCE does not stipulate the complete absence of roads; rather the PCE stipulates no major roads over the specified area (see <http://sedac.ciesin.columbia.edu/data/set/wildareas-v2-human-influence-index-geographic/maps>).

(176) Comment: Jaguars avoid human disturbance but male jaguars readily cross roadways and areas of human activity. Areas of human disturbance and roads do not prevent jaguars from using these areas.

Our response: In our proposed rule, the Service recognizes that male jaguars have been documented near roads, but the data do not indicate that this is where the majority of jaguar sightings

occur. Studies have also shown that jaguars selectively use large areas of relatively intact habitat away from certain forms of human influence. The Act requires us to determine critical habitat based on the physical and biological features essential to the jaguar; we determined that the most recent habitat model (Sanderson and Fisher 2013, entire), which uses the human influence index, provides the best available scientific data to determine these features.

(177) Comment: The Service should consider the impacts of smaller roads on wildlife, which have been well documented, in regards to how small roads could impact jaguar critical habitat. In addition to negative impacts on wildlife, primitive roads damage soils, vegetation, air quality, water quality, and archeological artifacts, and introduce noxious, nonnative species into forests where they often out-compete native species. The environmental effects of roads, road density, and off-road recreational activity are not individual, but rather cumulative and synergistic because seemingly small, individual impacts may result in large-scale changes in the reproductive success and survival of organisms, thereby altering the ecology of an area.

Our response: While the Service did not specifically consider impacts of smaller roads, the Service used the human influence index (HII), which is characterized by minimal to no human population density, no major roads, or no stable nighttime lighting over any 1-square-km (0.4-square-mi) area. This is based on the HII used in the habitat model developed by Sanderson and Fisher (2011, pp. 5–11, 2013 p. 6). In the latest version of the habitat model (Sanderson and Fisher 2013, entire), jaguar habitat was partly defined by an HII of less than 20 in the northernmost part of the Northwestern Recovery Unit. Additionally (and as also described in our response to comment number 43 in *Comments from States* above), the Service analyzed a subset of recent, highly accurate jaguar locations from Mexico and the United States to determine if filtering the observations in this way would influence the frequency that these observations occurred across the range of habitat variables.

The results of our additional analysis indicate that the overall pattern in frequency of jaguar observations using these highly accurate locations relative to the habitat variables is similar to the patterns observed using the entire data set used for the updated habitat model (Sanderson and Fisher 2013, entire). Specifically related to HII, 97 percent

are located in areas where the HII is less than 20, which is the range of HII that the Jaguar Recovery Team determined to provide the best jaguar habitat in the northernmost portion of the proposed Northwestern Recovery Unit. Therefore, based on this information, we identify areas in which the HII calculated over 1-square km (0.4-square mi) is 20 or less as an essential component of the physical or biological feature essential for the conservation of the jaguar in the United States. These areas are characterized by minimal to no human population density, no major roads, or no stable nighttime lighting over any 1-square km (0.4-square mi) area. We consider that the human influence PCE, as determined by the Human Influence Index, adequately captures the impact of roads (see <http://sedac.ciesin.columbia.edu/data/set/wildareas-v2-human-influence-index-geographic/maps>).

(178) Comment: Since jaguar recovery in the United States is contingent upon recovery in Mexico, it is important to ensure that any United States Federal activities do not jeopardize the jaguar, adversely modify its habitat, or destroy its habitat in Mexico. To the extent that the Mexican Government has identified jaguar habitat that is critical to the species, the United States should incorporate that designation by reference in its critical habitat designation, as well as any eventual recovery plan for the species. And where an agency action could result in jeopardy or potentially adversely modify habitat in Mexico, that agency must consult with the Service.

Our response: We do agree that conservation of the jaguar and its habitat in Mexico is vital to its recovery. Therefore, we will continue to work with our partners in Mexico toward conservation of the species there. Our regulations for critical habitat designation (50 CFR 424.12(h)) specifically preclude designation of lands outside of the U.S. jurisdiction. Therefore, we did not designate any areas in Mexico as critical habitat. In addition, our section 7 consultation implementing regulations (50 CFR 402.01) limit the definition of an action to all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. Therefore, we do not consult on Federal actions outside of these areas.

#### Exclusions and Exemptions

(179) Comment: The Service should exclude the City of Sierra Vista.

Our response: Critical habitat does not include developed areas such as lands

covered by buildings, pavement, and other structures because such lands lack the physical or biological feature necessary for jaguars. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Any such lands inadvertently left inside critical habitat boundaries shown on the maps of this final rule have been excluded by text in the rule and are not designated as critical habitat.

(180) Comment: The interests of national security and economic stability outweigh benefits of critical habitat designation.

Our response: The Service has conducted an analysis of impacts to national security and economics. The results of this analysis indicate that designation of critical habitat will not affect national security or economics. A copy of the final economic analysis with supporting documents may be obtained by contacting the Arizona Ecological Services Fish and Wildlife Office (see **ADDRESSES**) or by downloading from the Internet at <http://www.regulations.gov>. See the *Application of Section 4(b)(2) of the Act* section of this final rule.

(181) Comment: The Service should exclude Cochise County because the Cochise County Comprehensive Plan (amended in 2011) already provides habitat conservation for the jaguar making critical habitat unnecessary.

Our response: Critical habitat does not include developed areas such as lands covered by buildings, pavement, and other structures because such lands lack the physical or biological feature necessary for jaguars. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Any such lands inadvertently left inside critical habitat boundaries shown on the maps of this final rule have been excluded by text in the rule and are not designated as critical habitat.

(182) Comment: The Service should exclude the residential subdivision located east of State Highway 83 in Subunit 4b (formerly within Subunit 4b, now within Unit 3). Excluding these areas will not cause the species' extinction.

Our response: Critical habitat does not include developed areas such as lands covered by buildings, pavement, and other structures because such lands lack the physical or biological feature necessary for jaguars. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Any

such lands inadvertently left inside critical habitat boundaries shown on the maps of this final rule have been excluded by text in the rule and are not designated as critical habitat.

#### NEPA

(183) Comment: The Service should complete a full environmental impact analysis because of the degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

Our response: The designation of critical habitat by the Service for the conservation of endangered species is not a precedent-setting action with significant effects. The agency has designated critical habitat for numerous other species.

(184) Comment: The Service should complete a full environmental impact analysis because the Service re-defines the time of listing as a 50-plus-year time period, which is arbitrary and capricious.

Our response: The time of listing (for the purpose of determining whether it can be properly considered critical habitat) has no relevance in evaluating impacts to the human environment. In the context of an environmental assessment, the evaluation of the impacts of critical habitat designation focuses on outcomes of the potential increase in section 7 consultations resulting from the designation, since the designation does not itself produce or authorize direct physical impacts. For the jaguar, the Service's classification of whether a particular area was occupied at the time of listing or not (for the purpose of determining whether it can be properly considered critical habitat) has no relevance to determining section 7 consultation outcomes and the impacts of critical habitat designation. Given the secretive and transient nature of the jaguar, Federal land managers currently take steps to protect the jaguar even without critical habitat in areas that are considered by the Service to be both occupied and unoccupied at the time of listing. In determining whether there is a possibility that a project or action would jeopardize the species, the Service considers what impact may occur to actual members of the species. In a section 7 context, it does not matter whether the area in question was occupied at the time of listing or whether it was occupied at a later time; the key question is whether the geographical area is occupied at the time the section 7 consultation is conducted. Therefore, because of current Federal land management practices, the Service does not

anticipate that designation of critical habitat would result in consultations that would not otherwise take place for jeopardy analysis in all designated critical habitat areas.

(185) Comment: The draft environmental assessment is inadequate because it fails to consider reasonable alternatives submitted by the public and provide reasons for eliminating these recommendations from further study.

Our response: Although section 102 (C)(iii) of NEPA requires us to consider alternatives to the proposed action, we are not required to consider every possible alternative. Rather, we consider a reasonable range of alternatives, which include those considered to be practical and feasible from a technical standpoint. The environmental assessment evaluates the environmental effects of three alternatives. These alternatives include the no action alternative (no designation of critical habitat), designation of critical habitat in all areas that meet the definition of critical habitat, and designation of critical habitat in all areas where the benefits of exclusion do not outweigh the benefits of inclusion. We are required to consider the "no action" alternative, and the two action alternatives are the only feasible alternatives that we consider under NEPA while still meeting our requirements under the Endangered Species Act. Therefore, the range of alternatives we considered in the environmental assessment is adequate under the procedural requirements of NEPA and the Council on Environmental Quality's Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500–1518).

(186) Comment: The draft environmental assessment is inadequate because it fails to meet the NEPA standard of balanced multiple use management.

Our response: There is not a balanced multiple use management standard under NEPA.

(187) Comment: The draft environmental assessment is inadequate because it fails to analyze impacts on the human environment.

Our response: The draft environmental assessment does analyze impacts to the human environment and is adequate. The primary purpose of preparing an environmental assessment under NEPA is to determine whether a proposed action would have significant impacts on the human environment. If significant impacts may result from a proposed action, then an environmental impact statement is required. Whether a proposed action exceeds a threshold of significance is determined by analyzing

the context and the intensity of the proposed action (40 CFR 1508.27). Context refers to the setting of the proposed action and potential impacts of that action. The context of a significance determination may be society as a whole (human, national), the affected region, the affected interests, or the locality. Intensity refers to the severity of the impacts. Under regulations of the Council of Environmental Quality (CEQ), which is responsible for ensuring compliance with NEPA, intensity is determined by considering 10 criteria (40 CFR 1508.27(b)). See chapter 4 of the draft environmental assessment for a list of these 10 criteria. Based on the draft environmental assessment, the designation of critical habitat for the jaguar will not have significant impacts on the human environment.

(188) Comment: The draft environmental assessment is inadequate because it fails to accurately classify recreational use of most critical habitat.

Our response: In the environmental assessment we recognize that recreational areas in the proposed critical habitat exist on tribal lands (Tohono O'odham Nation); Federal and State-owned lands, including Coronado National Forest, BLM lands, Buenos Aires National Wildlife Refuge (NWR), Coronado National Memorial, and Arizona State lands. Further, we identify several types of recreational activities that take place in or near proposed critical habitat areas for the jaguar, such as hiking, hunting, boating, swimming, birding, wildlife viewing, photography, sight-seeing, pleasure-driving, angling, camping, horseback riding, and off-highway vehicle use. Level of use and type of activity vary by site characteristics, landownership, management policy, and accessibility. The National Visitor Use Monitoring program provides estimates of the volume and characteristics of recreation visitation to the National Forest System. A National Forest Visit is defined as the entry of one person upon a national forest to participate in recreational activities for an unspecified period of time. The most recent annual visitation data estimates 2,793 annual visits to the Coronado National Forest (IEC 2013, p. 14).

The activity most likely to be impacted by the designation of critical habitat is OHV use. OHV use is authorized on certain roads that pass near proposed critical habitat in Coronado National Forest, especially in units 2, 3, and 5. All of the Coronado National Forest recreational areas are within or adjacent to units 2, 3, and 5. Most of the proposed habitat segments

receive relatively low-level recreational use because of their remoteness and/or difficult terrain. Many of these roads are used primarily to access dispersed camping (IEc 2013, p. 14).

On the single NWR within proposed critical habitat (the Buenos Aires NWR, in Pima County, Arizona), popular recreational activities include camping, picnicking, mountain biking, horseback riding, hiking, and backpacking. Motorized vehicles are restricted to roadways. Hunting is permitted on approximately 90 percent of the refuge and is subject to both Refuge and Arizona State Hunting Regulations. Recreational uses in the NWR will likely increase with population growth in southern Arizona and in light of the stated goal of the 2003 Comprehensive Conservation Plan (CCP) to provide safe, accessible, high-quality wildlife-dependent recreational opportunities.

On BLM land, Coronado National Forest, Fort Huachuca, and Buenos Aires NWR, there could potentially be minor adverse impacts from critical habitat designation on some recreational opportunities and activities within designated critical habitat (e.g., OHV use) from the limitations and restrictions imposed on recreational activities to preserve PCEs. However, other recreational activities and opportunities would be enhanced, and could benefit from critical habitat designation (e.g., birdwatching, wildlife viewing, day hiking), because of increased habitat conservation.

Because modifications to the PCEs of critical habitat are closely tied to adverse effects to the species, current activities and activities that would trigger consultation for critical habitat are largely the same. Both the adverse and beneficial effects of critical habitat designation on recreation-related activities are expected to be minor because recreational use of most critical habitat areas is light and (1) new consultations based solely on the presence of designated critical habitat are unlikely, because land managers are already consulting on jaguar throughout the proposed critical habitat areas; and (2) the likelihood that reasonable and prudent alternatives developed under the jeopardy standard would be changed substantially with the addition of critical habitat designation and application of the adverse modification standard is small. Additional information is provided in the final environmental assessment section 3.11.

(189) Comment: The draft environmental assessment is inadequate because it fails to evaluate significant economic impacts due to water

restrictions within the proposed designation of critical habitat.

Our response: In the context of an environmental assessment, the evaluation of the impacts of critical habitat designation focuses on outcomes of the potential increase in section 7 consultations resulting from the designation, since the designation does not itself produce or authorize direct physical impacts. A separate analysis was conducted by Industrial Economics Incorporated (IEc 2013) to assess the potential economic impacts associated with designation of critical habitat for the jaguar. Where appropriate, information from the draft economic analysis has been incorporated into the environmental assessment.

(190) Comment: The draft environmental assessment is inadequate because it fails to evaluate the level of controversy if the Rosemont Mine is constructed. The Service should complete a full environmental impact statement because of the controversial nature of the proposed action.

Our response: The environmental assessment evaluates impacts from the designation of critical habitat, not the impacts of the mine. The impacts from the designation of critical habitat for the jaguar are not likely to be highly controversial because the quality of the environment would not be significantly modified from current conditions. This analysis was based on past consultations, past impacts of jaguar conservation on activities within the jaguar recovery area, and the likely future impacts from jaguar conservation. Past section 7 consultations within designated critical habitat would likely be re-initiated. New activities could result in section 7 consultations. New consultations in unoccupied jaguar territories could be triggered. A number of activities, including wildland fire, fire management, and recreation could have jaguar conservation-related constraints or limitations imposed on them, although such measures would likely be the same as those under jeopardy consultations for the species. Impacts to water management and resource activities are not expected to be controversial because, as discussed in the analysis of impacts on water resources, the constraints on current water management activities are expected to be limited.

The Service understands that, given the prior history of designation, some level of controversy may result, especially if the outcome of the Service's consultation on the Rosemont Copper Mine leads to significant delays, re-evaluation, or termination of the project. However, the Rosemont Copper

Mine biological opinion has been completed, and the Service determined that the mine would not result in destruction or adverse modification of jaguar critical habitat.

(191) Comment: The Service should complete a full environmental impact statement to be in compliance with the 10th Circuit decision.

Our response: The U.S. Court of Appeals for the Tenth Circuit stipulates we undertake a NEPA analysis for critical habitat designation and notify the public of the availability of the draft environmental assessment for a proposal when it is finished. The Service has complied with this requirement. See our response to comment 67 in *Comments from the States* under NEPA.

(192) Comment: The draft environmental assessment is inadequate because it fails to evaluate safety to our children, people, livestock, and pets.

Our response: The environmental assessment does evaluate safety. Foreseeable activities with potential risks to public health and safety include mining operations and activities related to fire management, particularly in the wildlife-urban interface (WUI) areas and areas where vegetation fuel loading has created conditions for catastrophic fire. There would be no or negligible impacts to public health or safety from the proposed designation of critical habitat. Impacts of wildland fire on public health and safety were determined to be minor, as wildland fire suppression and wildland fire management within WUI areas would not be significantly impeded by the designation of critical habitat. The designation would not create or lead to additional mining operations, or the deposition of pollutants to the air or water. Border enforcement activities would still be conducted within proposed critical habitat, pursuant to section 102 of the Illegal Immigration Reform and Immigrant Responsibility Act, under which the Secretary of the DHS is authorized to waive laws where the Secretary of DHS deems it necessary to ensure the expeditious construction of border infrastructure in areas of high illegal entry.

(193) Comment: The draft environmental assessment is inadequate because it fails to evaluate tribal customs and cultures, and economy.

Our response: This critical habitat designation is not likely to affect sites, objects, or structures of historical, scientific, or cultural significance. The proposed designation would not result in any ground-disturbing activities that have the potential to affect archeological or other cultural resources. There are

several National Register of Historic Places listed historical sites within, or within close range of, critical habitat units, but they are human-built structures, which the proposed designation specifically avoids. Potential conservation measures or project modifications to protect critical habitat PCEs would not modify or pose risk of harm to any historic properties listed in or eligible for the NRHP.

(194) Comment: The Service should complete a full environmental impact statement because the action significantly affects the quality of the human environment.

Our response: Under the Council on Environmental Quality (CEQ) regulations, 40 CFR 1508.27, the determination of “significant” impacts, for the purpose of determining whether a more detailed environmental impact statement must be prepared, requires consideration of both context and intensity. Potential impacts on environmental resources, both beneficial and adverse, would be minor. Impacts of critical habitat designation on natural resources within the areas to be designated as jaguar habitat were analyzed and discussed in Chapter 3 of the draft environmental assessment. Applying the analysis of impacts to the significance criteria defined in CEQ regulations, the Service concludes that the adverse impacts of critical habitat designation would not be significant.

(195) Comment: The Service should complete a full environmental impact statement because the economic impacts on the local, state, and national economies.

Our response: Indirect socioeconomic impacts faced by project proponents, land managers, and landowners could include time delays, regulatory uncertainty, and stigma. However, the environmental assessment concludes that these are considered indirect, incremental impacts of the designation. See Chapter 3, Section 3.10 for a complete description of socioeconomics.

(196) Comment: The Service should complete a full environmental impact statement because adverse impacts of the proposed designation outweigh benefits.

Our response: The primary purpose of preparing an environmental assessment under NEPA is to determine whether a proposed action would have significant impacts on the human environment. The purpose of the proposed action is to designate critical habitat for the jaguar, listed as endangered under the Act. Critical habitat designation would have long-term, beneficial, conservation-related impacts on jaguar

survival and recovery through maintenance of PCEs. Potential impacts to environmental resources, both beneficial and adverse, would be minor or moderate in all cases. Analyses of impacts of critical habitat designation on sensitive resources within areas proposed as jaguar critical habitat were conducted and discussed in Chapter 3 of the draft environmental assessment, and it was concluded that designation of critical habitat would have both adverse or beneficial impacts on those resources. None of the specific resource or activity analyses found that the adverse impacts of critical habitat designation would be significant.

(197) Comment: The Service should complete a full environmental impact statement because the degree of impacts on health and safety are significant if Fort Huachuca is not exempted and if border security is compromised.

Our response: The Service has exempted Fort Huachuca from critical habitat designation based on their INRMP. See the Exemptions section of this final rule for further information. Also, see our response to comment number 72 in *Comments from States*.

(198) Comment: The Service should complete a full environmental impact statement because impacts on the unique characteristics of the area are significant if recreation is inhibited or completely curtailed in portions of the proposed jaguar habitat.

Our response: There are no designated Wild and Scenic River segments within the critical habitat designation. There are designated Wilderness Areas within the units; activities proposed by the Federal land managers in these areas would only be those specifically intended to improve the health of these ecosystems, and thus they would be anticipated to help recover or sustain the PCEs along these segments. Therefore, any adverse impacts to critical habitat would be negligible at most.

(199) Comment: The Service should complete a full environmental impact statement because the proposed designation would impose unique, unknown, and uncertain risks to current water users.

Our response: The impacts do not pose any uncertain, unique, or unknown risks. Past section 7 consultations within proposed designated critical habitat would likely be reinitiated. New activities in unoccupied areas would result in section 7 consultations. Conservation constraints or limitations related to proposed designated critical habitat would be similar to those imposed from species-related constraints.

(200) Comment: The Service should complete a full environmental impact statement because the proposed action is related to other actions, which cumulatively could produce significant impacts.

Our response: There would not be any significant cumulative impacts because, as described above in Chapter 3 of the environmental assessment, cumulative impacts would be limited to section 7 consultation outcomes and subsequent effects on other species, the effects of designated critical habitat for other species, and the effects of land management plans.

The CEQ regulations define cumulative effects as “the impact on the environment which results from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR 1508.7). In the environmental assessment, we identify four other listed species with critical habitat that overlaps with jaguar proposed critical habitat. In the context of critical habitat, cumulative impacts could be created if critical habitat designations for multiple species affect the same natural and human resources. Actions that could have cumulative impacts would include: (1) Section 7 consultation outcomes and subsequent effects on other species; (2) the effects of designated critical habitat for other species; and (3) the effects of land management plans.

All of these units are already being included in consultations on activities that may adversely impact jaguar, so there would be no new consultations. However, while some of these areas may have undergone some section 7 consultation for the jaguar, the fact they are now being designated as critical habitat may require reevaluation of effects to PCEs for ongoing or not yet completed Federal actions, which then may require reinitiating consultation. This critical habitat designation will likely contribute minor cumulative impacts, given the number and nature of additional project modifications anticipated.

(201) Comment: The Service should complete a full environmental impact statement because the proposed action might adversely affect an endangered or threatened species or its habitat, as determined to be critical under the Act, because fuel loads would build and catastrophic fire potential would increase.

Our response: The designation of critical habitat for the jaguar will not

result in fuel loads buildup. Fuel-management activities, either mechanical treatments or prescribed burns, reduce the risks posed by heavy fuels loads. They intend to restore the forest ecosystem by reducing the risk of catastrophic wildland fire, lessening post-fire damage, and limiting the spread of invasive species and diseases. These activities would help maintain the jaguar PCE for greater than 1 to 50 percent canopy cover. Fuel-management and prescribed burning that are discountable, insignificant, or wholly beneficial to the PCEs do not require formal consultation; however, the action agency would need to confirm their finding of no adverse impact to jaguar critical habitat with the Service through informal consultation (Service 1998a). The primary impact of the additional formal or informal consultations would be increased administrative costs to the Service and action agencies.

### Economics

(202) Comment: The proposed rule and the draft economic analysis lack the actions that Federal land managers already implement to protect jaguars in the United States.

Our response: The U.S. Bureau of Land Management (BLM), U.S. Forest Service (USFS), U.S. National Park Service (NPS), and Service land managers in proposed critical habitat areas already consider potential impacts to jaguar when conducting activities within proposed critical habitat areas. Chapter 3 of the draft economic analysis evaluates potential economic impacts to Federal lands management, mining activity is discussed in Chapter 5 of the analysis, border activities are discussed in Chapter 4, and DOD lands are addressed in Chapter 8. In support of these statements, since 1995 we have participated in 20 formal consultations on including the jaguar in Federal land management activities, only 4 of which resulted in formal consultation on this species. While Federal land managers have varying levels of conservation for the jaguar, all take some conservation actions for their lands based on the Federal Land Policy and Management Act of 1976, which states that “. . . the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values; that . . . will preserve and protect certain public lands in their natural condition; (and) that will provide food and habitat for fish and wildlife . . .”

(203) Comment: The draft economic analysis ignores real economic costs by

not quantifying additional conservation measures that could be requested to avoid adverse modification during major construction projects.

Our response: As described in section 5.2 of the draft economic analysis, the types of conservation measures that could be requested for major construction projects that may adversely modify or destroy jaguar critical habitat include: creation of permeable highways; re-vegetation and restoration of habitat; modification or elimination of nighttime lighting; reduction of project footprint; minimization of human presence, vehicles, and traffic; and permanent protection of offsite habitat. The only two large-scale construction projects, the Rosemont Mine and the Hermosa Project, are addressed in Chapter 5. The final economic analysis has been revised based on the conclusions of the recent biological opinion for the Rosemont Mine. At the low end, the final economic analysis estimates costs associated with implementation of requested conservation measures. The final economic analysis also considers a second scenario in which Rosemont Mine chooses not to proceed to production. Section 5.5.1 of the draft economic analysis describes potential impacts of this scenario in terms of lost economic revenue, tax revenue, and employment. These impacts represent the high-end effects of foregone mine production.

(204) Comment: The draft economic analysis does not consider costs of third-party litigation related to the finalization of the revised proposed rule. The costs of litigation incurred by small ranchers may be as much as \$250,000 per case.

Our response: The Service does not consider the costs of litigation surrounding the critical habitat rule itself when considering the economic impacts of the rule. The extent to which litigation specifically regarding critical habitat may add to the costs of the designation is uncertain. While the critical habitat designation may stimulate additional legal actions, data do not exist to reliably estimate impacts. That is, estimating the number, scope, and timing of potential legal challenges would require significant speculation.

(205) Comment: The economic impacts of critical habitat designation will fall disproportionately on areas already under economic stress. Specifically, the areas of concern include the City of Douglas, Arizona; and Gila, Navajo, Greenlee, and Graham Counties in Arizona.

Our response: As described in Section 2.2 of the draft economic analysis, at the

guidance of OMB and in compliance with Executive Order 12866 “Regulatory Planning and Review,” the draft economic analysis measures changes in economic efficiency in order to understand how society, as a whole, will be affected by a regulatory action. However, recognizing that distributive impacts may disproportionately affect some areas, the draft economic analysis also considers impacts on small entities; impacts on energy supply, distribution, and use; and regional economic impacts. Substantial changes to the regional economies are not expected for most industries within proposed critical habitat for the jaguar. Where potential exists for regional economic impacts—for example, if proposed mining operations do not proceed to production because of critical habitat designation—these impacts are estimated. In addition, the draft economic analysis provides information on the geographic distribution of impacts by unit in order to allow the Secretary to evaluate potential exclusions from critical habitat designation.

(206) Comment: The jaguar is not present within Arizona, and, as such, all economic impacts should be attributed to the designation of critical habitat and not the listing of the species. The draft economic analysis incorrectly characterizes costs that should be attributed to the designation of critical habitat as costs that would occur in the baseline due to the species’ listing.

Our response: Due to the transient nature of the jaguar, land managers may not implement conservation measures based solely on whether the species occupies an area. Therefore, to assign costs to the baseline or incremental scenarios in the draft economic analysis, we contacted land managers within the proposed designation, including the Bureau of Land Management (BLM), U.S. Forest Service (USFS), and U.S. Customs and Border Protection (CBP), regarding possible changes to their management approaches following the designation of critical habitat. Where land managers already consider both the jaguar and its habitat, we assumed that incremental conservation measures were unlikely. For example, section 3.2.2 of the draft economic analysis discusses that BLM already considers the potential presence of the jaguar in all proposed critical units and subunits that fall within its jurisdiction. Where land managers may implement different conservation measures following the designation of critical habitat, we consider the costs of those conservation measures to be incremental.

(207) Comment: The draft economic analysis fails to disclose that Federal

and State agencies have already spent over \$1.2 billion on the jaguar.

Our response: The draft economic analysis focuses on estimating future impacts of the designation of critical habitat, and does not retrospectively quantify baseline costs of jaguar conservation efforts. However, the draft economic analysis does provide information on conservation efforts that have been implemented in the past or are likely to be implemented in the future, absent the designation of critical habitat. The draft economic analysis does quantify future baseline impacts, which are forecast to be approximately \$1.6 million over the next 20 years.

(208) Comment: The draft economic analysis does not describe what steps Federal land managers already take to protect the jaguar.

Our response: Conservation efforts that may benefit the jaguar and its habitat and are likely to be implemented in the baseline are described separately for each economic activity. Specifically, the second section of each activity-specific chapter in the draft economic analysis (e.g., section 3.2, section 4.2, etc.) discusses the types of projects that may have a Federal nexus for consultation and provides information on conservation efforts that have been implemented in the past or are likely to be implemented in the future, absent the designation of critical habitat.

(209) Comment: The draft economic analysis understates the incremental costs of consultation for the Coronado National Forest because the consultation forecast does not include travel management planning. These costs are instead misattributed to the CBP.

Our response: As described in Chapter 4–2 of the draft economic analysis, best management practices for CBP include designing access roads to minimize animal collisions and fragmentation of threatened and endangered populations. We expect that CBP operations will continue to adopt these best management practices following the designation of critical habitat. Additionally, as presented in section 3.4.1 of the draft economic analysis, we use the jaguar consultation history for the Coronado National Forest to forecast nine formal and nine informal consultations over the next 20 years. We assume that any travel management planning undertaken by the Coronado National Forest will be included in this consultation forecast.

(210) Comment: Additional clarification of impacts to activities on BLM lands is needed. Specifically, clarification of BLM's approach to consideration of the jaguar, "major" projects that could be affected by the

designation, and impacts resulting from programmatic consultation on grazing operations on BLM lands is needed.

Our response: In developing the economic analysis, we contacted regional land managers at relevant Federal agencies, including BLM, regarding the agencies' current approach to jaguar conservation. Given the transient nature of the jaguar, BLM consults with the Service throughout the range of the jaguar in proposed critical habitat areas under its jurisdiction, including areas that may be unoccupied. BLM indicated that consultations expected for the foreseeable future are likely to relate to grazing activities. BLM did not implement any substantial changes to conservation management as a result of the agency's most recent programmatic consultation on livestock grazing activities, which included consideration of the jaguar. As a result, the agency does not anticipate future management changes following the critical habitat designation. Clarifying text has been added to section 3.2.2 to address these questions.

(211) Comment: The draft economic analysis should address impacts to hunting, fishing, and other recreational activities.

Our response: The draft economic analysis addresses potential impacts to recreational activities in Chapter 3 as part of the discussion of potential impacts to Federal land management. We do not forecast substantial changes to recreational management. Recreational activities that do not occur on Federal lands are unlikely to have a Federal nexus for section 7 consultation and, therefore, would not be affected by the designation of critical habitat.

(212) Comment: Clarification as to whether use of roads and hiking trails will be affected by the designation of critical habitat for the jaguar is needed. The discussion of potential conservation measures, including road closures and limitations to public access, on page 4–1 of the draft economic analysis suggests that CBP jaguar conservation efforts could affect hiking.

Our response: The discussion cited in this comment refers specifically to CBP roads. The potential for impacts to recreational activities is discussed in Chapter 3 of the draft economic analysis. As discussed in section 3.4 of the draft economic analysis, the economic analysis does not anticipate impacts to Federal land management activities beyond administrative costs of consultation. As a result, impacts to hiking are not anticipated.

(213) Comment: The analysis of impacts to the mining industry relies on

industry-commissioned reports that may reflect potential bias. The draft economic analysis does not incorporate previous studies of the economic impact of the Rosemont Mine, such as those prepared by Dr. Thomas Michael Power in 2010 and 2012.

Our response: The draft economic analysis would estimate regional economic impacts of changes to the mining industry by using peer-reviewed, third-party studies if any were available. However, such studies do not exist. At the time the draft economic analysis was prepared, the best available data on the regional economic contributions of the Rosemont Mine and the Hermosa Project came from reports commissioned by the mining industry. Chapter 5 of the draft economic analysis acknowledges this affiliation. The final economic analysis has been revised to incorporate the information provided via public comment.

(214) Comment: The draft economic analysis incorrectly uses measures of gross economic activity as an indication of economic value of the Rosemont Mine and the Hermosa Project. These measures do not account for the costs associated with mining operations or the probability that production will be displaced to other mine locations. Alternative numbers from the same studies cited in the draft economic analysis that may provide a more reasonable estimate of the economic value of the mines should be used.

Our response: Chapter 5 of the draft economic analysis used measures of the increase in economic activity, as estimated by existing economic assessments conducted for the Rosemont Mine and the Hermosa Project, to describe the upper bound on possible economic losses. However, the commenter is correct that these values likely overstate the true economic impact of the loss of production. As a result, the final economic analysis has been revised to include the numbers suggested by this commenter, along with text describing potential caveats to these measures. The commenter is also correct that the true regional economic impact would account for the opportunity cost of producing at substitute mine locations. However, information on the location of such substitute sites is not available, and as a result, the draft economic analysis is not able to account for these costs. The final economic analysis has been revised to clarify and expand the discussion of potential impacts, as well as limitations of the analysis.

(215) Comment: The draft economic analysis does not estimate impacts

associated with changes in the price of copper, silver, and manganese that may result if mining projects are delayed or halted.

Our response: Substantial uncertainty exists regarding impacts of the designation of critical habitat on large mining projects that could sever connectivity to Mexico. For this reason, Chapter 5 considers two scenarios. At the low end, we estimate costs associated with the conservation measures requested in the recent biological opinion for the Rosemont Mine. At the high end, we assume that the Rosemont Mine and Hermosa Project will not proceed to production due to the high cost of conservation measures requested to avoid adverse modification of critical habitat. Although these scenarios result in incremental economic impacts, costs would be incurred primarily at the local or State levels. Although global mineral prices are not anticipated to be affected by changes to production at these two mines, the potential impact of changes to anticipated production at these mines is acknowledged in the final economic analysis.

(216) Comment: The draft economic analysis fails to consider the economic and national security impacts of critical habitat designation on the maintenance and development of existing mining claims on Federal lands, or those held by individuals and small entities.

Our response: To inform the analysis of economic impacts to mining operations, the Service and USFS provided information on the historical rate of consultation on mining activities as well as the number of mining claims over the past year. Communication with USFS indicated that small mining claims typically do not require section 7 consultation. However, Service records indicate that consultation has occasionally occurred for mineral exploration, resulting in informal consultation. Past conservation measures associated with these activities have included changes to lighting design, as well as recommended changes to the project footprint during the planning stage.

To be conservative, the draft economic analysis includes incremental administrative costs for development and maintenance of mining claims, although most small claims are not expected to require consultation. Additional text has been added to the final economic analysis to clarify that small mining claims typically do not require consultation.

(217) Comment: The draft economic analysis does not address the potential economic impacts of the designation of

critical habitat on manganese production at Wildcat Silver's Hermosa Project. The United States currently imports 100 percent of its manganese.

Our response: Sections 5.4.2 and 5.5.2 of the draft economic analysis forecast economic impacts of the designation of critical habitat on the Hermosa Project. This analysis utilizes and reports the estimated net present value of the Hermosa Project, accounting for costs of production and tax responsibilities, as summarized in the Hermosa Project Preliminary Economic Assessment. This assessment incorporates potential future revenues associated with all production at the Hermosa Project, including manganese production.

(218) Comment: The draft economic analysis fails to incorporate the best available information on the extent of mining and mineral resources within the proposed designation. Specifically, the proposed designation spans an area with many established mining districts and includes many patented and unpatented mining claims within the Patagonia Mountains. The draft economic analysis did not contact BLM or USFS for information on planned mining projects. The Service should review the information on the Coronado National Forest's schedule of proposed actions and source information for online databases of mining claims, mineral surveys, and land records. The draft economic analysis underestimates impacts to mining operations by not including such actions in the analysis.

Our response: To inform the analysis of mineral extraction activities in the draft economic analysis, we spoke with BLM and USFS managers about the frequency and type of consultations associated with mining activities. Section 5.3 of the draft economic analysis describes the historical rate of consultation with USFS since the listing of the species. The historical consultation rate for the jaguar does not include any consultations with BLM on mining activity, and communication with BLM did not identify any planned mining projects. As a result, we use the historical rate of consultation on USFS lands to forecast future impacts, as well as evaluating impacts separately for the two large mining construction projects known to be planned within critical habitat.

Communication with USFS indicated that small mining claims typically do not require section 7 consultation. However, Service records indicate that consultation has occasionally occurred for mineral exploration, resulting in informal consultation. Past conservation measures associated with these activities have included changes to

lighting design, as well as recommended changes to the project footprint during the planning stage.

To be conservative, the draft economic analysis includes incremental administrative costs for development and maintenance of mining claims, although most small claims are not expected to require consultation. Additional text has been added to the final economic analysis to clarify that small mining claims typically do not require consultation.

(219) Comment: The draft economic analysis of mining impacts does not provide useful information because it notes that the probability that incremental conservation measures will be requested ranges from zero to 100 percent.

Our response: The final economic analysis has been revised based on the conclusions of the recent biological opinion for the Rosemont Mine. At the low end, the final economic analysis estimates costs associated with implementation of requested conservation measures. Because of concerns expressed previously by the mining companies, the final economic analysis also considers a second scenario in which the mine chooses not to proceed to production. The final economic analysis notes that, based on the outcome of the section 7 consultation for the Rosemont Mine, the second scenario is considered less likely to occur. However, at the time the draft economic analysis was prepared, the relative likelihood of the two scenarios could not be predicted, and the Service presented a range of plausible impacts as the best available information.

(220) Comment: The draft economic analysis treats tax revenues as pure benefits to local, state, and Federal governments. The analysis does not account for the related increase in demand for public services that could result from new mining activity.

Our response: The commenter is correct that the net regional economic impacts would account for increases in public expenditures resulting from increases in mineral production due to increased demand for public services. However, information on the potential magnitude of such an increase in demand for public services is not available. The final economic analysis has been revised to clarify and expand the discussion of potential regional economic impacts, as well as limitations of the analysis.

(221) Comment: The draft economic analysis presents regional economic impacts associated with mining activity as comparable to economic efficiency losses associated with increased

consultation. The regional economic impacts are a separate measure of economic activity and cannot be added to economic efficiency losses.

Our response: Section 2.2 of the draft economic analysis describes the distinction between efficiency effects and distributional effects. It is correct that the draft economic analysis reported in Chapter 5, as part of a scenario describing upper bound impacts related to mining activities, regional economic impacts as potential impacts of the rule. However, these were reported separately from efficiency effects. Clarifying text has been added to the final economic analysis.

(222) Comment: The draft economic analysis does not consider the value of alternative land uses at the Rosemont Mine site that could affect the cost to society should mining not proceed.

Our response: It is correct that a more precise measure of potential economic impacts to the area that is being considered for Rosemont Mine would consider that, should the area not be mined, the area could be used for other purposes, such as recreation, which would offset to some degree regional impacts of not mining the area. However, because of uncertainty of alternative future uses, the draft economic analysis is not able to account for these opportunity costs. As such, the reported potential societal costs of not mining may be less than is reported in the upper bound scenario. The final economic analysis has been revised to clarify and expand the discussion of potential regional economic impacts, as well as limitations of the analysis.

(223) Comment: The draft economic analysis concludes that the benefits of the Rosemont Mine dominate any potential costs, resulting in a large cost to the region and the state if the mine does not proceed. The draft economic analysis does not document the analysis that led to that conclusion.

Our response: The draft economic analysis provides an estimate of potential future costs of critical habitat designation. It does not conclude that costs exceed benefits, nor does the analysis attempt to weigh costs against benefits at all. Instead, the draft economic analysis provides information on the likely magnitude of costs and the types of ancillary benefits that may occur to inform the evaluation of the designation by the Secretary of the Department of the Interior. As discussed in Chapter 2, the Service believes that the direct benefits of the proposed rule are best expressed in biological terms that can be weighed against the expected cost impacts of the rulemaking. Chapter 5 of the draft

economic analysis describes cost impacts associated with the potential loss of mineral production at the Rosemont Mine, and potential economic benefits are addressed separately in Chapter 11. The final economic analysis has been revised to clarify that the loss of potential employment and revenues associated with Rosemont Mine are not net of potential benefits.

(224) Comment: The draft economic analysis fails to include any costs associated with conservation measures for mining activities, despite describing the potential for such costs to occur. Instead, the draft economic analysis forecasts only a small amount of incremental administrative costs. The information on the cost of conservation measures is available in the preliminary economic assessment for the Hermosa Project.

Our response: The final economic analysis has been revised to incorporate available quantitative information on the Hermosa Project, wherever possible. However, while the Preliminary Economic Assessment for the Hermosa Project includes information on the breakdown of capital and operating costs, it does not provide information specific to jaguar conservation efforts. The cost estimates in the Preliminary Economic Assessment are not provided to a level of detail that would allow such estimation. For these reasons, the draft economic analysis is not able to fully quantify costs of implementing conservation measures that may be undertaken for the jaguar and its habitat at the Rosemont Mine or the Hermosa Project using these data.

(225) Comment: The draft economic analysis refers to potential impacts to large mining projects as being “unquantified” in the conclusions for the analysis, despite providing quantified estimates for these impacts elsewhere in the analysis.

Our response: The text of the final economic analysis has been revised to clarify that potential impacts to mining projects are quantified but not added to other impact estimates due to the high level of uncertainty surrounding impact estimates. The final economic analysis has also been revised to incorporate discussion of these impacts into the report’s conclusions.

(226) Comment: The draft economic analysis underestimates costs to mining operations by ignoring economic impacts of conservation measures. In particular, the draft economic analysis ignores the expected economic contribution of the Rosemont Mine, as estimated in the analysis by the L. William Seidman Research Institute cited in the draft economic analysis,

when quantifying costs associated with the proposed designation.

Our response: The final economic analysis has been revised based on the conclusions of the recent biological opinion for the Rosemont Mine. At the low end, the final economic analysis estimates costs associated with implementation of requested conservation measures. The final economic analysis also considers a second scenario in which Rosemont Mine chooses not to proceed to production. Section 5.5.1 of the draft economic analysis describes potential impacts of this scenario in terms of lost economic revenue, tax revenue, and employment, using the values estimated in the analysis conducted by the L. William Seidman Research Institute. These impacts represent the high-end effects of foregone mine production.

(227) Comment: The draft economic analysis suggests that the designation of critical habitat will result in economic benefits by limiting mining activity. However, the draft economic analysis ignores the benefits that mining projects, such as the Rosemont Mine, may provide to local, state, and national economies.

Our response: Section 5.5.1 of the draft economic analysis describes the potential economic impacts of a scenario in which the Rosemont Mine is not able to proceed to production. To estimate these costs, the draft economic analysis assumes that economic benefits of the mine, including economic revenue, tax revenue, and employment, would be foregone. Section 5.5.2 of the draft economic analysis provides a similar description of foregone economic benefits for the Hermosa Project. In these sections, the draft economic analysis acknowledges that mining projects may provide benefits to local, state, and national economies, and that these benefits may be lost if the designation of critical habitat hinders production.

(228) Comment: The designation of critical habitat will lead to a decrease in the value of privately owned land. The designation would place restrictions on the landowner’s ability to subdivide the land. Additionally, entering into a conservation easement would decrease the value of the land.

Our response: Section 2.3.2 of the draft economic analysis discusses that public attitudes about the limits or restrictions that critical habitat may impose can cause real economic effects to property owners, regardless of whether such limits are actually imposed (stigma effects). As the public becomes aware of the true regulatory burden imposed by critical habitat, the

impact of the designation on property markets may decrease. Thus, to the extent that stigma impacts occur in the future, impacts are expected to be temporary.

(229) Comment: The draft economic analysis underestimates the number of consultations relating to grazing that will occur over the analytic timeframe. Every Federal grazing permittee within the proposed designation will be subject to reinitiated consultation and will have to consult twice within the 20-year analytic timeframe, based on typical timeframes for permit renewals. The draft economic analysis should consider costs to individuals and local ranchers, in addition to overall impacts. In particular, the draft economic analysis should consider costs associated with consultations for new construction or maintenance of range improvements on Federal grazing allotments.

Our response: As discussed in Section 3.4 of the draft economic analysis, based on communication with BLM and USFS staff and the agencies' consultation history, we assume that both BLM and USFS will reinitiate programmatic consultations on livestock grazing activities. These programmatic consultations will cover all Federal grazing permittees collectively. The agencies do not anticipate undertaking individual consultations with, or on behalf of, permittees.

(230) Comment: The designation of critical habitat may affect the relationship between the Natural Resources Conservation Service (NRCS) and ranchers. In particular, the designation of critical habitat may lead to a reduction in NRCS participation within the proposed designation, and could therefore result in regional economic and environmental impacts.

Our response: Section 9.4.1 of the draft economic analysis addresses the public concern that ranchers and farmers could withdraw participation in Federal programs, such as those implemented by NRCS, in order to avoid a potential Federal nexus for consultation generated by receipt of Federal funding. However, as described in the draft economic analysis, the designation of critical habitat for other species in the region has not led to such withdrawals, in the experience of NRCS. As a result, the draft economic analysis does not forecast economic impacts associated with withdrawals from Federal conservation programs due to the designation of critical habitat.

(231) Comment: One paragraph in the draft economic analysis implies that private landowners consult directly with the Service. It should be clarified that Federal agencies, such as NRCS,

BLM, or the Bureau of Reclamation, consult with the Service.

Our response: The text of the final economic analysis has been revised to clarify that NRCS, and not individual landowners, would consult with the Service. Individual landowners may, in some cases, participate in section 7 consultation as third parties.

(232) Comment: The draft economic analysis should consider economic impacts related to precluding, delaying, or requiring mitigation for the construction of the previously proposed Sierrita natural gas pipeline, which is expected to cross jaguar critical habitat.

Our response: As described in section 9.1 of the draft economic analysis, the installation of natural gas pipelines may occur in proposed critical habitat areas. In addition, as described in chapter 3 of the draft economic analysis, BLM consulted on a pipeline project in 2006. We use historic rates of consultation to forecast future costs associated with both miscellaneous activities and projects on BLM lands. In this manner, we incorporate the possibility that a future consultation on the Sierrita natural gas pipeline may occur. Currently, sufficient information on the project scope and location is not available to forecast potential conservation measures for this pipeline. A brief discussion of this potential project has been added to the final economic analysis.

(233) Comment: The draft economic analysis should address the impacts of multiple species management, especially with regard to reductions in cattle grazing on USFS lands. Such livestock reductions may be attributed to the conservation of numerous listed species, including the jaguar.

Our response: Past actions related to consultations on grazing activities related to other species have affected grazing opportunities in some areas. However, as discussed in Chapter 3 of the draft economic analysis, no changes to grazing on Federal lands are expected as a result of the designation of critical habitat for the jaguar in either the baseline or incremental scenario.

(234) Comment: The Service should include additional information on impacts to small businesses, such as information on the percentage of farmers and ranchers in Arizona and New Mexico that are considered small businesses and that are owned by women, and the impact the designation would have on these businesses.

Our response: As described in section A.1.2 of Appendix A, small entities are generally not directly involved in the consultation process between NRCS or U.S. Department of Agriculture (USDA)

and the Service. As a result, impacts to small ranchers are not expected.

(235) Comment: The Service should include a reference for a statement in the draft economic analysis that describes the review process for range improvement projects carried out by the Arizona State Land Department (ASLD). The draft economic analysis states that this review is conducted by the Arizona Game and Fish Department (AGFD).

Our response: As cited in the draft economic analysis, the statement references personal communication with the Arizona State Land Department (ASLD) regarding typical project review.

(236) Comment: The draft economic analysis should quantify direct and indirect economic benefits of the designation of critical habitat. In particular, the analysis should note the potential for educational, recreational, and eco-tourism benefits.

Our response: The primary purpose of critical habitat designation is to support the conservation of the jaguar. Rather than rely on economic measures, the Service believes that the direct benefits of the proposed rule are best expressed in biological terms that can be weighed against the expected cost impacts of the rulemaking. As described in Chapter 11 of the draft economic analysis, quantification and monetization of this conservation benefit requires information on the incremental change in the probability of conservation resulting from the designation. Such information is not available, and as a result, monetization of the primary benefit of critical habitat designation is not possible. However, Chapter 11 of the draft economic analysis provides a qualitative description of the potential categories of direct and ancillary benefits that may result from the designation. The benefits described in Chapter 11 include those mentioned in public comments, such as use values (e.g., wildlife viewing or eco-tourism), non-use values (e.g., existence value), aesthetic benefits, educational benefits, and property value benefits. This chapter also identifies the critical habitat units where such benefits are likely to occur.

### Required Determinations

In our August 20, 2012, proposed rule (77 FR 50214), we indicated that we would defer our determination of compliance with several statutes and executive orders until the information concerning potential economic impacts of the designation and potential effects on landowners and stakeholders became available in the draft economic analysis. We have now made use of the draft economic analysis data to make these

determinations. In this document, we affirm the information in our proposed rule concerning Executive Orders (E.O.s) 12866 and 13563 (Regulatory Planning and Review), E.O. 13132 (Federalism), E.O. 12988 (Civil Justice Reform), E.O. 13211 (Energy, Supply, Distribution, and Use), the Unfunded Mandates Reform Act (2 U.S.C. 1501 *et seq.*), and the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*). However, based on the draft economic analysis data and draft environmental assessment, we are amending our required determinations concerning the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), the National Environmental Policy Act (42 U.S.C. 4321 *et seq.*), and E.O. 12630 (Takings). In addition, we are amending our required determinations concerning the President's memorandum of April 29, 1994, "Government-to-Government Relations with Native American Tribal Governments" (59 FR 22951).

*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 an 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. In this final rule, we are certifying that the critical habitat designation for jaguar will not have a significant economic impact on a substantial number of small entities. The following discussion explains our rationale.

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; as well as 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 agricultural businesses with annual sales less than \$750,000. To determine if potential economic impacts on these small entities are significant, we consider the types of activities that might trigger regulatory impacts under this rule, as well as the 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.

Importantly, the incremental impacts of a rule must be *both* significant and substantial to prevent certification of the rule under the RFA and to require the preparation of an initial regulatory flexibility analysis. If a substantial number of small entities are affected by the proposed 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.

The Service's current understanding of recent case law is that Federal

agencies are required to evaluate the potential impacts of rulemaking only 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 has a regulatory effect only 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, Executive Orders 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.

In conclusion, we believe that, based on our interpretation of directly regulated entities under the RFA and relevant case law, this designation of critical habitat will only directly regulate Federal agencies, which are not by definition small business entities. And as such, we certify that, if promulgated, this designation of critical habitat would not have a significant economic impact on a substantial number of small business entities. Therefore, an initial regulatory flexibility analysis is not required. However, though not necessarily required by the RFA, in our final economic analysis for this rule we considered and evaluated the potential effects to third parties that may be involved with consultations with Federal action agencies related to this action.

Designation of critical habitat only affects activities authorized, funded, or

carried out by Federal agencies. Some kinds of activities are unlikely to have any Federal involvement and so will not be affected by critical habitat designation. In areas where the species is present, Federal agencies already are required to consult with us under section 7 of the Act on activities they authorize, fund, or carry out that may affect the jaguar. Federal agencies also must consult with us if their activities may affect critical habitat. Designation of critical habitat, therefore, could result in an additional economic impact on small entities due to the requirement to reinstate consultation for ongoing Federal activities (see *Determinations of Adverse Effects and Application of the "Adverse Modification" Standard* section, above).

In our final economic analysis of the critical habitat designation, we evaluated the potential economic effects on small business entities resulting from conservation actions related to the listing of the jaguar and the designation of critical habitat. The analysis is based on the estimated impacts associated with the rulemaking as described in Chapters 2 through 10 and Appendix A of the analysis and evaluates the potential for economic impacts related to: (1) Federal land management; (2) border protection activities; (3) mining; (4) transportation activities; (5) development; (6) military activities; (7) livestock grazing and other activities; and (8) Tohono O'odham Nation activities.

To determine if the designation of critical habitat for the jaguar would affect a substantial number of small entities, we considered the number of small entities affected within particular types of economic activities, such as mining, transportation construction, development, and agriculture and grazing. In order to determine whether it is appropriate for our agency to certify that this rule would not have a significant economic impact on a substantial number of small entities, we considered each industry or category individually. In estimating the numbers of small entities potentially affected, we also considered whether their activities have any Federal involvement. Critical habitat designation will not affect activities that do not have any Federal involvement; designation of critical habitat only affects activities conducted, funded, permitted, or authorized by Federal agencies. Because the jaguar is already listed as an endangered species under the Act, in areas where the jaguar is present, Federal agencies are required to consult with us under section 7 of the Act on activities they fund, permit, or implement that may affect the species.

Consultations to avoid the destruction or adverse modification of critical habitat would be incorporated into the existing consultation process.

In the final economic analysis, we evaluated the potential economic effects on small entities resulting from implementation of conservation actions related to the designation of critical habitat for the jaguar. The designation of critical habitat for the jaguar is unlikely to directly affect any small entities. The costs associated with the designation are likely to be limited to the incremental impacts associated with administrative costs of section 7 consultations. Small entities may participate in section 7 consultation as a third party (the primary consulting parties being the Service and the Federal action agency). It is therefore possible that the small entities may spend additional time considering critical habitat due to the need for a section 7 consultation for the jaguar. We do not expect critical habitat designation to result in impacts to small entities for the following activities: forest management, border protection, and military activities (as they do not involve third parties, only Federal and State agencies); and development, recreation, and utility construction (as we do not forecast any impacts to these activities). Additionally, Chapter 10 of the final economic analysis details the potential incremental impacts of critical habitat designation on tribes with lands overlapping the designation. Tribes are generally not subject to review under the RFA/SBREFA. For example, in its guidance on preparing analyses in compliance with the RFA/SBREFA, the Environmental Protection Agency states that, for the purposes of the RFA, States and tribal governments are not considered small governments but rather as independent sovereigns.

Estimated incremental costs that may be borne by small entities consist of administrative impacts of section 7 consultation related to mining, transportation construction, and agriculture and grazing. These potential impacts are described in greater detail below. It is uncertain whether any third parties involved with mining or transportation would be considered small entities when fully operational; however, assuming that they would qualify as small entities, the cost of consultation represents less than 1 percent of each company's annual revenues. Potential impacts to agriculture and grazing related to foregone Natural Resources Conservation Service (NRCS) funding are not quantified; however, we do not expect small entities to bear a direct burden. Please refer to the final

economic analysis of the critical habitat designation for a more detailed discussion of potential economic impacts.

#### Mining

Chapter 5 of the final economic analysis describes potential impacts arising from three known formal consultations on mining: the Rosemont Mine, the Hermosa Project, and the Coronado National Forest Land and Resource Management Plan. According to the Small Business Administration, to be considered a small entity in this industry, companies must employ fewer than 500 people (13 CFR 121.201). The Coronado National Forest is a Federal entity and is not considered small.

As of 2011, Augusta Resource Corporation, which is the parent company of Rosemont Mine, employed a total of 56 people throughout Canada and the United States. Rosemont Mine anticipates employing up to 494 people directly at the Rosemont Mine. It is therefore unlikely that, following construction of the Rosemont Mine, Augusta Resource Corporation will employ fewer than 500 people.

It is uncertain whether Wildcat Silver will employ more than 500 workers during the operation of the Hermosa Project. Therefore, we conservatively assume that Wildcat Silver is a small entity. The cost of consultation for Wildcat Silver is approximately \$875. Although Wildcat Silver is considered to be an exploration stage enterprise and has yet to generate revenue from its operations, this cost is unlikely to be a significant burden on the company, as its assets exceeded \$60 million and it had more than \$3 million in cash and cash equivalents as of September 30, 2012.

Additionally, in Chapter 5 of the final economic analysis, we discuss the potential for jaguar critical habitat to affect other mineral mining operations. While incremental project modification impacts are not forecast for these activities over 20 years, administrative costs related to 2.5 forecasted informal consultations on mining exploration may involve small entities as third-party project proponents. It is uncertain whether third parties involved in these mining consultations will be small; however, we conservatively assume that each forecast consultation on mining will involve a small entity. The cost of consultation is approximately \$875. This cost likely represents less than one percent of annual revenues for mining companies.

## Transportation Construction

In the final economic analysis, we forecast consultations on these activities, as discussed in Chapter 6. These consultations will likely not involve third parties, as transportation consultations typically require only administrative effort on the part of State departments of transportation and the Service. However, we conservatively assume that all consultations will involve a small third party. We forecast two formal consultations and seven technical assistance consultations on such projects that may involve small entities within the study area. Assuming that all transportation potential impacts are borne by nine small private entities,

this amounts to less than one consultation per year. The per-entity impact, ranging from approximately \$875 to \$7,875, represents less than one percent of annual revenues.

## Agriculture and Grazing

In the final economic analysis, we forecast consultations on these activities, as discussed in Chapter 9. In this analysis, we discuss potential impacts related to foregone NRCS funding, but do not quantify these impacts. While up to six separate small entities could be affected based on past rates of NRCS funding near critical habitat, we do not expect these entities to bear a direct burden. Additionally,

the possibility exists for administrative impacts to occur in association with two formal and three informal forecast consultations on agriculture and grazing projects that may involve small entities within the study area. However, small entities are likely not directly involved in the consultation process between NRCS or U.S. Department of Agriculture with the Service.

Table 5 presents the results of the final economic analysis. It provides the relevant small entity thresholds by North American Industry Classification System (NAICS) code, the total number of entities and small entities, and the estimated incremental impacts as a percentage of annual revenues.

TABLE 5—SUMMARY OF POTENTIAL IMPACTS ON SMALL ENTITIES

Activity	Industry (NAICS codes)	Small entity size standard (millions of dollars)	Total number of entities	Number of small entities	Number of affected small entities <sup>1</sup> (percent of total small entities)	Incremental economic impacts to small businesses <sup>2</sup>	Impacts as percent of annual revenues <sup>3</sup>
Transportation .....	Highway, Street and Bridge Construction (237310).	33.5 .....	120	110	9 (7%)	\$875 to \$7,875 <sup>4</sup> ...	0.09
	Other Heavy and Civil Engineering Construction (237990).	33.5 .....	30	28			
Agriculture and Grazing.	Beef Cattle Ranching and Farming (112111).	0.75 .....	80	74	0 (0%)	\$0 per entity <sup>5</sup> .....	0
	Cotton Farming (115111).	0.75 .....	3	1			
Mining .....	Iron Ore Mining (212210).	500 employees .....	0	0	4 (13%)	\$875 to \$3,500 <sup>6</sup>	
	Gold Ore Mining (212221).	500 employees .....	6	6			
	Silver Ore Mining (212222).	500 employees .....	1	1			
	Lead Ore and Zinc Ore Mining (212231).	500 employees .....	6	6			
	Copper Ore and Nickel Ore Mining (212234).	500 employees .....	33	8			
	Uranium-Radium-Vanadium Ore Mining (212291).	500 employees .....	0	0			
	All Other Metal Ore Mining (212299).	500 employees .....	0	0			
	Support Activities for Metal Mining (213114).	7 .....	9	8			
	Support Activities for Nonmetallic Minerals, except fuels (213115).	7 .....	3	3			

## Notes:

1. To estimate the number of affected small entities, this analysis assumes one small entity per forecast section 7 consultation. For agriculture and grazing, this assumes one small entity per NRCS funding instance.

2. For these activities, we conservatively estimate that all administrative costs of consultation will be incurred by a small entity in a single year. Therefore, we use the total, undiscounted third party incremental costs of a formal consultation.

3. Annual revenues are estimated using Risk Management Association (RMA), *Annual Statement Studies: Financial Ratio Benchmarks 2012 to 2013*, 2012. For each NAICS code, RMA provides the net sales and the number of entities falling within several sales categories: \$0 to \$1 million, \$1 to 3 million, \$3 to \$5 million, \$5 to 10 million, or \$10 to \$25 million. Based on the number of entities and total net sales falling within each sales category, we developed an estimate of the weighted average net sales (revenues) per small entity: for transportation-related firms, annual revenues were estimated to be approximately \$8.6 million; for companies involved in agriculture and grazing, revenues are estimated at \$430,000 annually; for mining firms, annual revenue information was not available, but due to the highly capitalized nature of the mining industry, mining firms are assumed to have high annual revenues such that per-entity impacts of \$2,625 resulting from the designation of critical habitat are likely to be insignificant.

4. We are uncertain in what year consultations and technical assistance requests on transportation activities will occur over the next 20 years. For the purposes of this analysis, we assume affected small entities will participate in approximately nine consultations or technical assistance requests over 20 years, or less than one consultation per year. However, if we assume that a single small entity participates in multiple formal consultations in a single year, the administrative costs of such activity are still likely to be less than one percent of annual tax revenues (e.g., nine consultations  $\times$  \$875/\$9,000,000 = 0.09 percent of annual revenues).

5. Potential impacts related to NRCS funding are not quantified.

6. We are uncertain in what year consultations on mining will occur over the next 20 years. For the purposes of this analysis, we assume affected small entities will participate in approximately 4 consultations over 20 years, one of which will be associated with the Hermosa Project and will involve Wildcat Silver Corporation. However, if we assume that a single small entity participates in multiple consultations in a single year, the administrative costs of such activity are still likely to be less than one percent of annual revenues. Although data on annual revenues for mining companies were unavailable, due to the highly capitalized nature of the mining industry, companies involved in mining operations are likely to produce revenues large enough that the cost of undertaking three consultations in a single year would likely be less than one percent of annual revenues (e.g., four consultations  $\times$  \$875 = \$3,500. \$3,500 represents one percent of annual revenues of \$350,000. Mining companies are likely to produce revenues of greater than \$350,000 annually).

**Source:** Dialog search of File 516, Dun and Bradstreet, "Duns Market Identifiers," on January 3, 2013.

In summary, we considered whether this designation would result in a significant economic effect on a substantial number of small entities. Based on the above reasoning and currently available information, we concluded that this rule would not result in a significant economic impact on a substantial number of small entities. Therefore, we are certifying that the designation of critical habitat for jaguar 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. OMB has provided guidance for implementing this Executive Order that outlines nine outcomes that may constitute "a significant adverse effect" when compared to not taking the regulatory action under consideration.

The economic analysis finds that none of these criteria are relevant to this analysis. Thus, based on information in the economic analysis, energy-related impacts associated with jaguar conservation activities within critical habitat are not expected. As such, the designation of critical habitat 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 tribal 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 tribal 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 tribal 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 tribal 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 do not believe that this rule will significantly or uniquely affect small governments because it would 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. The final economic analysis concludes incremental impacts may occur due to (1) the administrative costs of conducting section 7 consultation; and (2) implementation of any conservation efforts requested by the Service through section 7 consultation to avoid potential destruction or adverse modification of critical habitat; however, these are not expected to

significantly affect small governments. Incremental impacts stemming from various species conservation and development control activities are expected to be borne by the Federal Government, State agencies, with some effects to mining and transportation, which are not considered small 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 will significantly or uniquely affect small government entities. As such, a Small Government Agency Plan is not required.

#### *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 jaguar in a takings implications assessment. The economic analysis found that no significant economic impacts are likely to result from the designation of critical habitat for the jaguar. Based on information contained in the economic analysis and described within this document, it is not likely that economic impacts to a property owner would be of a sufficient magnitude to support a takings action. Therefore, the takings implications assessment concludes that this designation of critical habitat for the jaguar does not pose significant takings implications for lands within or affected by the designation.

#### *Federalism—Executive Order 13132*

In accordance with E.O. 13132 (Federalism), this final rule does not have significant Federalism effects. A Federalism assessment is not required. In keeping with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of this critical habitat designation with, appropriate State resource agencies in New Mexico and Arizona. We received comments from the New Mexico Department of Game and Fish and the Arizona Game and Fish Department and have addressed them in the Summary of Comments and Recommendations section of the rule. From a federalism perspective, the designation of critical habitat directly affects only the responsibilities of Federal agencies. 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. The designation may have some benefit to these governments because the areas that contain the features essential to the conservation of the species are more clearly defined, and the physical or biological features of the habitat necessary to the conservation of the species are specifically identified. This information does not alter where and what federally sponsored activities may occur. However, it may assist these local governments in long-range planning (because these local governments no longer have to wait for case-by-case section 7 consultations to occur).

Where State and local governments require approval or authorization from a Federal agency for actions that may affect critical habitat, consultation under section 7(a)(2) would be required. 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.

#### *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 applicable standards set forth in sections 3(a) and 3(b)(2) of the Order. We are designating 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 jaguar. 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. We published a notice outlining our reasons for this determination 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 (*Douglas County v. Babbitt*, 48 F.3d 1495 (9th Cir. 1995), cert. denied 516 U.S. 1042 (1996)). However, when the range of the species includes States within the Tenth Circuit, such as that of the jaguar, under the Tenth Circuit ruling in *Catron County Board of Commissioners v. U.S. Fish and Wildlife Service*, 75 F.3d 1429 (10th Cir. 1996), we undertake a NEPA analysis for critical habitat designation and notify the public of the availability of the draft environmental assessment for a proposal when it is finished.

We performed the NEPA analysis, and a draft of the environmental assessment was available for public comment in the **Federal Register** on July 1, 2013 (78 FR 39237). We also accepted public comments on the draft environmental assessment and made revisions in response to many of those comments (see Summary of Comments and Recommendations above). The final environmental assessment has been completed and is available for review with the publication of this final rule. You may obtain a copy of the final environmental assessment online at <http://www.regulations.gov>, by mail from the Arizona Ecological Services Fish and Wildlife Office (see **ADDRESSES**), or by visiting our Web site at <http://www.fws.gov/southwest/es/arizona/jaguar.htm>.

We analyzed the potential impacts of critical habitat designation on the following resources and resource management types: Land use and management; fish, wildlife, and plants (including endangered and threatened species); fire management; water resources (including water management projects and groundwater pumping); livestock grazing; construction and development (including roads, bridges, dams, infrastructure, residential); tribal trust resources; soils; recreation and

hunting; socioeconomics; environmental justice; mining and minerals extraction; and National security. We found that the designation of critical habitat for the jaguar would not have direct impacts on the environment as designation is not expected to impose land use restrictions or prohibit land use activities. However, the designation of critical habitat could:

- (1) Increase the number of additional section 7 consultations for proposed projects within designated critical habitat;
- (2) trigger new consultations in unoccupied areas;
- (3) increase the number of reinitiated section 7 consultations for ongoing projects within designated critical habitat;
- (4) maintain the jaguar's PCEs;
- (5) increase the likelihood of greater expenditures of time and Federal funds to develop measures to prevent both adverse effects to the species and adverse modification to critical habitat; and
- (6) indirectly increase the likelihood of greater expenditure of non-Federal funds by project proponents to complete section 7 consultations and to develop reasonable and prudent alternatives (to avoid adverse modification or destruction of critical habitat by Federal agencies) that maintain critical habitat. Such an increase might occur where there is a Federal nexus to actions within areas with no known jaguar territories, or from the addition of adverse modification analyses to jeopardy consultations in known jaguar habitat.

The primary purpose of preparing an environmental assessment under NEPA is to determine whether a proposed action would have significant impacts on the human environment. If significant impacts may result from a proposed action, then an environmental impact statement is required (40 CFR 1502.3). Whether a proposed action exceeds a threshold of significance is determined by analyzing the context and the intensity of the proposed action (40 CFR 1508.27). Our environmental assessment found that the impacts of the proposed critical habitat designation would be minor and not rise to a significant level, so preparation of an environmental impact statement is not required.

#### *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), 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. 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 tribal 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.

Using the criteria found in the *Criteria Used To Identify Critical Habitat* section, we have determined that there are tribal lands that were occupied by jaguar at the time of listing that contain the features essential for the conservation of the species, as well as tribal lands unoccupied by the species at the time of listing that are essential for the conservation of the jaguar in the United States. Potentially affected Tribes include: The Ak Chin Community, Gila River Indian Community, Hope Tribe, Pascua Yaqui Tribe, Salt River Pima Maricopa Indian Tribe, San Carlos Apache Tribe, Tohono O'odham Tribe, and White Mountain Apache Tribe. The Tohono O'odham Nation is the only tribe with tribal lands within designated critical habitat. We have conducted government-to-government consultation with these tribes throughout the public comment period and during development of the final designation of jaguar critical habitat.

On May 16, 2012, we sent a letter to the Tohono O'odham Nation (the one Tribe that owns and manages land within the proposed designation) and Bureau of Indian Affairs notifying them of our intent to propose critical habitat for the jaguar and describing the exclusion process under section 4(b)(2) of the Act. On August 24, 2012, we notified all tribes potentially affected by our proposal to designate jaguar critical habitat via email, then followed up by sending a letter to each tribal leader on September 28, 2012. We engaged in conversations with the Tohono O'odham Nation about the proposal to the extent possible without disclosing pre-decisional information. On September 27, 2012, we met with

Tohono O'odham Nation staff to discuss the proposed designation. On August 30, 2013, we notified all tribes potentially affected by our revised proposal to designate jaguar critical habitat via email that we reopened the comment period on the revised proposed rule, draft economic analysis, and draft environmental assessment, then followed up by sending a letter to each tribal leader on September 3, 2013. In addition, the Tohono O'odham Nation has a representative on the Jaguar Recovery Team and so the tribe has been aware that the Service was working on a critical habitat proposal.

We considered these tribal areas for exclusion from the final critical habitat designation to the extent consistent with the requirements of section 4(b)(2) of the Act, and subsequently, excluded all tribal lands from this final designation.

#### **References Cited**

A complete list of all references cited is available on the Internet at <http://www.regulations.gov> and upon request from the Arizona Ecological Services Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

#### **Authors**

The primary authors of this rulemaking are the staff members of the Arizona Ecological Services 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—[AMENDED]**

- 1. The authority citation for part 17 continues to read as follows:

**Authority:** 16 U.S.C. 1361–1407; 1531–1544; 4201–4245; unless otherwise noted.

- 2. Amend § 17.11(h) by revising the entry for “Jaguar (*Panthera onca*)” under “Mammals” in the List of Endangered and Threatened Wildlife to read as follows:

#### **§ 17.11 Endangered and threatened wildlife.**

\* \* \* \* \*

(h) \* \* \*

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
MAMMALS							
*	*	*	*		*		*
Jaguar .....	<i>Panthera onca</i> .....	U.S.A. (AZ, CA, LA, NM, TX) Mexico, Central and South America.	Entire .....	E	5, 622	17.95(a)	NA
*	*	*	*		*		*

■ 3. In § 17.95, amend paragraph (a) by adding an entry for “Jaguar (*Panthera onca*)”, in the same order that the species appears in the table at § 17.11(h), to read as follows:

**§ 17.95 Critical habitat—fish and wildlife.**

\* \* \* \* \*

(a) *Mammals.*

\* \* \* \* \*

Jaguar (*Panthera onca*)

(1) Critical habitat units are depicted for Pima, Santa Cruz, and Cochise Counties, Arizona, and Hidalgo County, New Mexico, on the maps below.

(2) Within these areas, the primary constituent elements of the physical or biological feature essential to the conservation of jaguar consists of expansive open spaces in the southwestern United States of at least 100 km<sup>2</sup> (32 to 38.6 mi<sup>2</sup>) in size which:

(i) Provide connectivity to Mexico;

(ii) Contain adequate levels of native prey species, including deer and javelina, as well as medium-sized prey such as coatis, skunks, raccoons, or jackrabbits;

(iii) Include surface water sources available within 20 km (12.4 mi) of each other;

(iv) Contain greater than 1 to 50 percent canopy cover within Madrean evergreen woodland, generally recognized by a mixture of oak (*Quercus* spp.), juniper (*Juniperus* spp.), and pine (*Pinus* spp.) trees on the landscape, or semidesert grassland vegetation communities, usually characterized by *Pleuraphis mutica* (tobosagrass) or *Bouteloua eriopoda* (black grama) along with other grasses;

(v) Are characterized by intermediately, moderately, or highly rugged terrain;

(vi) Are below 2,000 m (6,562 feet) in elevation; and

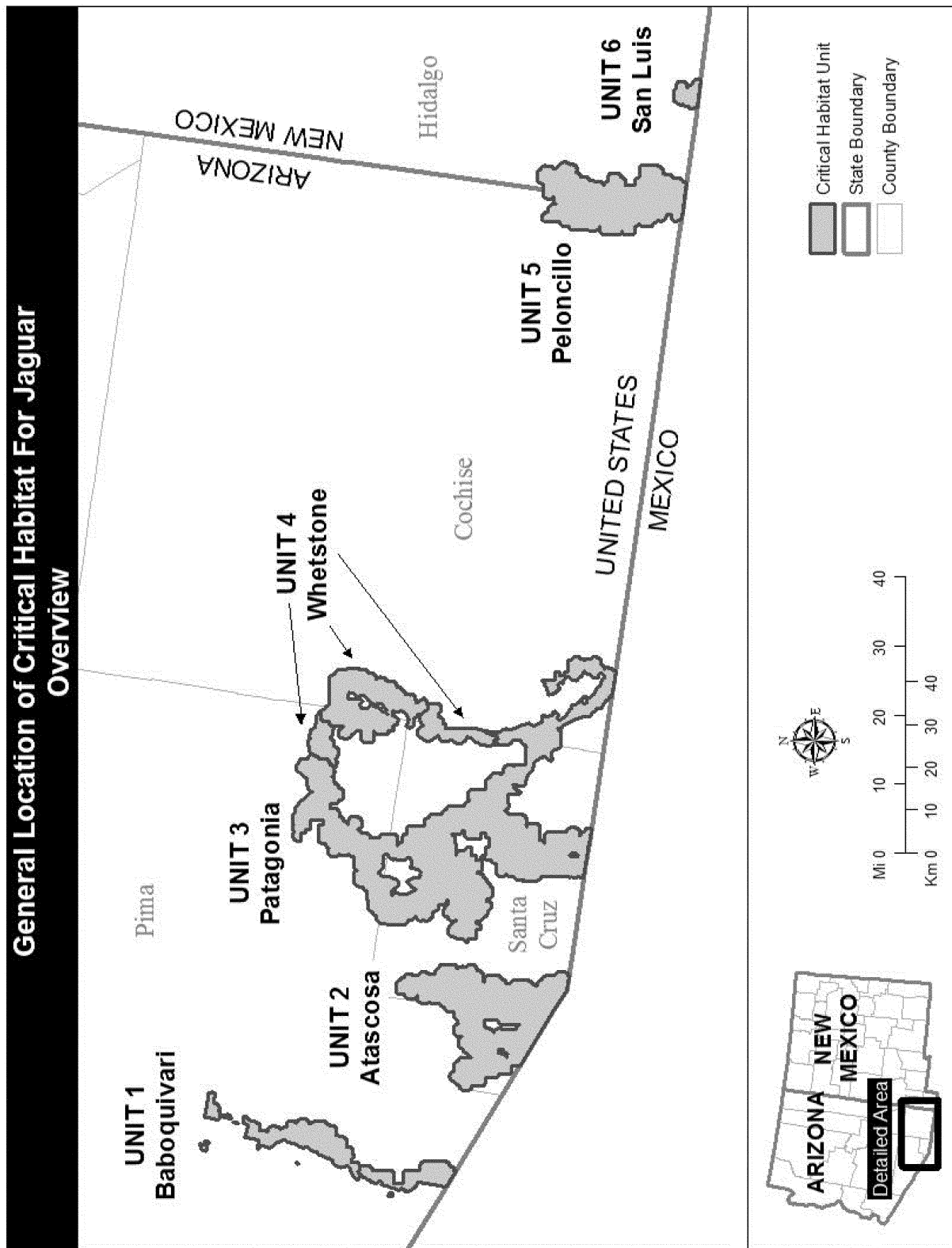
(vii) Are characterized by minimal to no human population density, no major roads, or no stable nighttime lighting over any 1-km<sup>2</sup> (0.4-mi<sup>2</sup>) area.

(3) Critical habitat does not include manmade structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on April 4, 2014.

(4) *Critical habitat map units.* Data layers defining map units were created using hydrography data, vegetation biomes, tree cover, terrain ruggedness, elevation, Human Influence Index, and undisputed Class I jaguar records from 1962 to September 11, 2013, and were then mapped using Universal Transverse Mercator (UTM) coordinates.

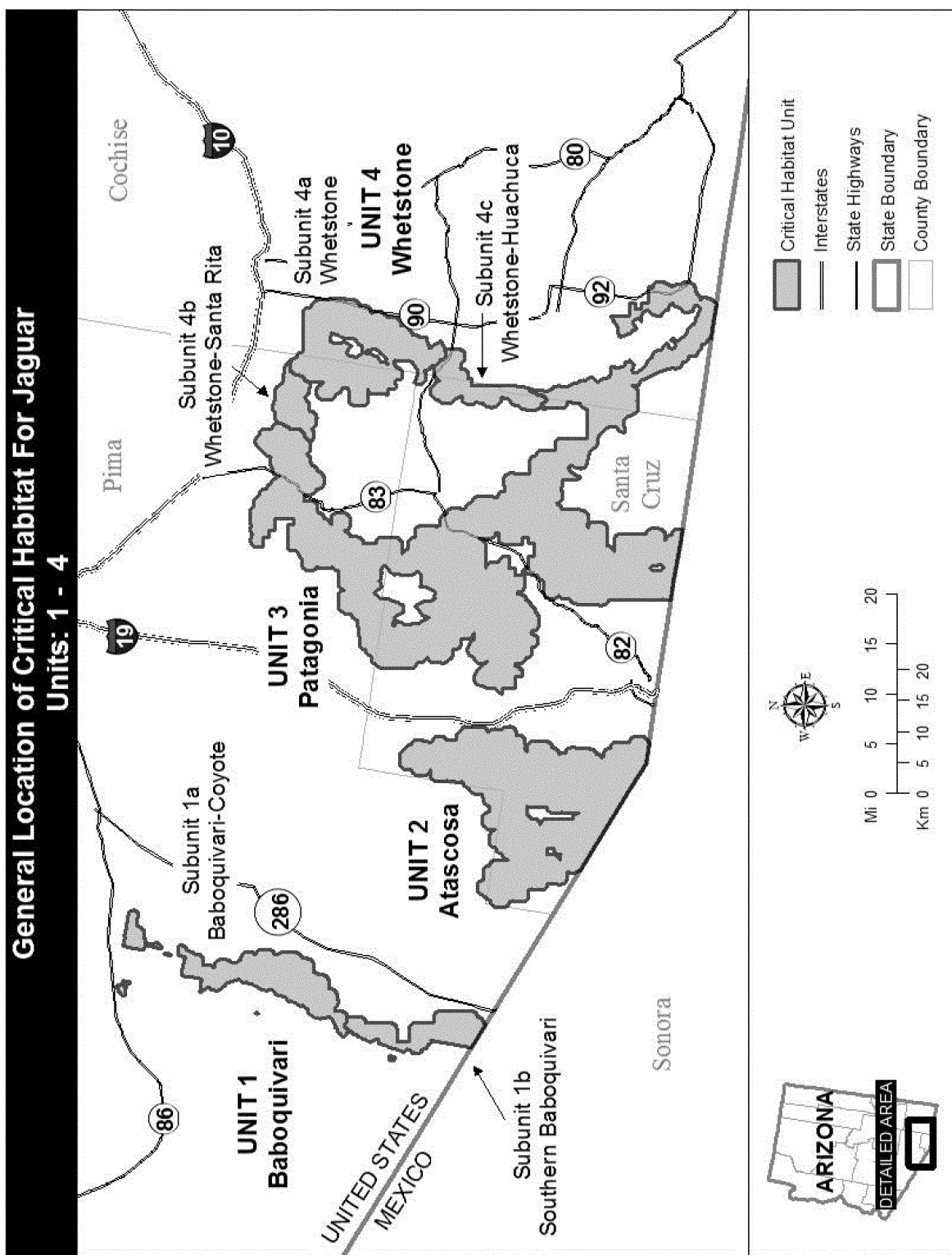
(5) Note: Index map follows:

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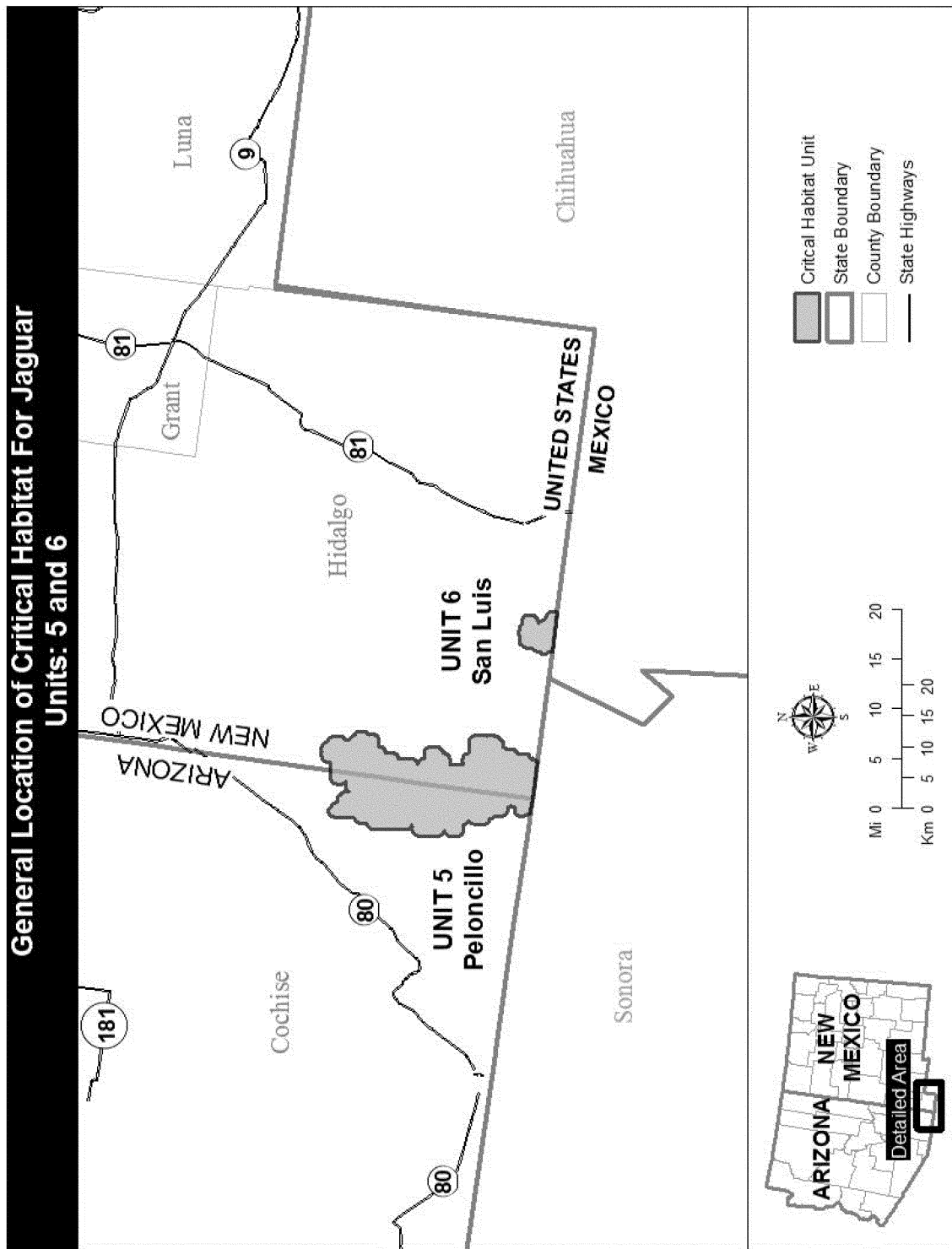
(6) Units 1, 2, 3, and 4: Baboquivari, Atascosa, Patagonia, and Whetstone Units, Pima, Santa Cruz, and Cochise

Counties, Arizona. Map of Units 1, 2, 3, and 4 follows:



(7) Units 5 and 6: Peloncillo and San Luis Units, Cochise County, Arizona,

and Hidalgo County, New Mexico. Map of Units 5 and 6 follows:



\* \* \* \* \*

Dated: January 29, 2014.

**Rachel Jacobson,**

*Principal Deputy Assistant Secretary for Fish  
and Wildlife and Parks.*

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