

(i) Submit requests for non-NASA provided external Internet connections to the Contracting Officer for approval by the Network Security Configuration Control Board (NSCCB);

(ii) Comply with the NASA CIO metrics including patch management, operating systems and application configuration guidelines, vulnerability scanning, incident reporting, system administrator certification, and security training; and

(iii) Utilize the NASA Public Key Infrastructure (PKI) for all encrypted communication or non-repudiation requirements within NASA when secure e-mail capability is required.

(c) Physical and Logical Access Requirements.

(1) Contractor personnel requiring access to IT systems operated by the Contractor for NASA or interconnected to a NASA network shall be screened at an appropriate level in accordance with NPR 2810 and Chapter 4, NPR 1600.1, NASA Security Program Procedural Requirements. NASA shall provide screening, appropriate to the highest risk level, of the IT systems and information accessed, using, as a minimum, National Agency Check with Inquiries (NACI). The Contractor shall submit the required forms to the NASA Center Chief of Security (CCS) within fourteen (14) days after contract award or assignment of an individual to a position requiring screening. The forms may be obtained from the CCS. At the option of NASA, interim access may be granted pending completion of the required investigation and final access determination. For Contractors who will reside on a NASA Center or installation, the security screening required for all required access (e.g., installation, facility, IT, information, etc.) is consolidated to ensure only one investigation is conducted based on the highest risk level. Contractors not residing on a NASA installation will be screened based on their IT access risk level determination only. See NPR 1600.1, Chapter 4.

(2) Guidance for selecting the appropriate level of screening is based on the risk of adverse impact to NASA missions. NASA defines three levels of risk for which screening is required (IT-1 has the highest level of risk):

(i) IT-1— Individuals having privileged access or limited privileged access to systems whose misuse can cause very serious adverse impact to NASA missions. These systems include, for example, those that can transmit commands directly modifying the behavior of spacecraft, satellites or aircraft.

(ii) IT-2— Individuals having privileged access or limited privileged access to systems whose misuse can cause serious adverse impact to NASA missions. These systems include, for example, those that can transmit commands directly modifying the behavior of payloads on spacecraft, satellites or aircraft; and those that contain the primary copy of "level 1" information whose cost to replace exceeds one million dollars.

(iii) IT-3— Individuals having privileged access or limited privileged access to systems whose misuse can cause significant adverse impact to NASA missions. These systems include, for example, those that interconnect with a NASA network in a way that exceeds access by the general public, such as bypassing firewalls; and systems operated by the Contractor for NASA whose function or information has substantial cost to replace, even if these systems are not interconnected with a NASA network.

(3) Screening for individuals shall employ forms appropriate for the level of risk as established in Chapter 4, NPR 1600.1.

(4) The Contractor may conduct its own screening of individuals requiring privileged access or limited privileged access provided the Contractor can demonstrate to the Contracting Officer that the procedures used by the Contractor are equivalent to NASA's personnel screening procedures for the risk level assigned for the IT position.

(5) Subject to approval of the Contracting Officer, the Contractor may forgo screening of Contractor personnel for those individuals who have proof of a—

(i) Current or recent national security clearances (within last three years);

(ii) Screening conducted by NASA within the last three years that meets or exceeds the screening requirements of the IT position; or

(iii) Screening conducted by the Contractor, within the last three years, that is equivalent to the NASA personnel screening procedures as approved by the Contracting Officer and concurred on by the CCS.

(d) The Contracting Officer may waive the requirements of paragraphs (b) and (c)(1) through (c)(3) upon request of the Contractor. The Contractor shall provide all relevant information requested by the Contracting Officer to support the waiver request.

(e) The Contractor shall contact the Contracting Officer for any documents, information, or forms necessary to comply with the requirements of this clause.

(f) The Contractor shall insert this clause, including this paragraph (f), in all subcontracts when the subcontractor is required to:

(1) Have physical or electronic access to NASA's computer systems, networks, or IT infrastructure; or

(2) Use information systems to generate, store, or exchange data with NASA or on behalf of NASA, regardless of whether the data resides on a NASA or a contractor's information system.

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition To Establish the Northern Rocky Mountain Gray Wolf Population (*Canis lupus*) as a Distinct Population Segment To Remove the Northern Rocky Mountain Gray Wolf Distinct Population Segment From the List of Endangered and Threatened Species

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of 12-month petition finding.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), announce a 12-month finding on a petition to establish the northern Rocky Mountain (NRM) gray wolf (*Canis lupus*) population as a Distinct Population Segment (DPS) and to remove the NRM gray wolf DPS from the Federal List of Endangered and Threatened Wildlife, under the Endangered Species Act of 1973, as amended (ESA). After review of all available scientific and commercial information, we find that the petitioned action is not warranted. We have determined that Wyoming State law and its wolf management plan do not provide the necessary regulatory mechanisms to assure that Wyoming's numerical and distributional share of a recovered NRM wolf population would be conserved if the protections of the ESA were removed.

DATES: The finding announced in this document was made on August 1, 2006.

ADDRESSES: Comments and materials received, as well as supporting documentation used in the preparation of this 12-month finding, will be available for public inspection, by appointment, during normal business hours at U.S. Fish and Wildlife Service,

Montana Ecological Services Office, 585 Shepard Way, Helena, Montana 59601.

FOR FURTHER INFORMATION CONTACT:

Edward E. Bangs, Western Gray Wolf Recovery Coordinator, at the above address (see **ADDRESSES**) or by telephone at (406) 449-5225, extension 204.

SUPPLEMENTARY INFORMATION:

Background

Section 4(b)(3)(A) of the ESA (16 U.S.C. 1531 et seq.) requires that we make a finding on whether a petition to list, delist, or reclassify a species presents substantial information to indicate the petitioned action may be warranted. Section 4(b)(3)(B) of the ESA requires that within 12 months after receiving a petition that contains substantial information indicating that the petitioned action may be warranted, the Secretary shall make one of the following findings: (a) The petitioned action is not warranted; (b) the petitioned action is warranted; or (c) the petitioned action is warranted but precluded by higher priority workload. Such 12-month findings are to be published promptly in the **Federal Register**.

Previous Federal Action

In 1974, we listed four subspecies of gray wolf as endangered, including the northern Rocky Mountain (NRM) gray wolf (*Canis lupus irremotus*); the eastern timber wolf (*C. l. lycaon*) in the northern Great Lakes region; the Mexican wolf (*C. l. baileyi*) in Mexico and the southwestern United States; and the Texas gray wolf (*C. l. monstabilis*) of Texas and Mexico (39 FR 1171; January 4, 1974). In 1978, we published a rule (43 FR 9607; March 9, 1978) listing the gray wolf as endangered at the species level (*C. lupus*) throughout the conterminous 48 States and Mexico, except for Minnesota, where the gray wolf was reclassified to threatened.

On November 22, 1994, we designated unoccupied portions of Idaho, Montana, and Wyoming as two nonessential experimental population areas for the gray wolf under section 10(j) of the ESA (59 FR 60252). This designation assisted us in initiating gray wolf reintroduction projects in central Idaho and the Greater Yellowstone Area (GYA). In 1995 and 1996, we reintroduced wolves from southwestern Canada into remote public lands in central Idaho and Yellowstone National Park (YNP) (Bangs and Fritts 1996; Fritts et al. 1997; Bangs et al. 1998). These reintroductions and accompanying management programs greatly expanded the numbers and distribution of wolves in the NRM. Because of the reintroductions, wolves

soon became established throughout central Idaho and the GYA (Bangs et al. 1998; Service et al. 2006). Naturally dispersing wolves from Canada led to the reestablishment of wolf packs into northern Montana in the early 1980s, and the number of wolves in this area steadily increased for the next decade (Service et al. 2006).

The wolf population in the NRM achieved its numerical and distributional recovery goals at the end of 2000, and the temporal portion of the recovery goal was achieved at the end of 2002 (Service et al. 2001, 2002, 2003). Before these wolves can be delisted, the Service requires that Idaho, Montana, and Wyoming develop wolf management plans to demonstrate that other adequate regulatory mechanisms exist should the ESA protections be removed. The Service determined that Montana and Idaho's laws and wolf management plans are adequate to assure the Service that those State's share of the NRM wolf population would be maintained above recovery levels, and the Service approved those two State plans. However, we determined that problems with Wyoming's legislation and plan, and inconsistencies between the law and management plan do not allow us to approve Wyoming's approach to wolf management (Williams 2004). In response, Wyoming litigated this issue (Wyoming U.S. District Court 04-CV-0123-J and 04-CV-0253-J consolidated). The Wyoming Federal District Court dismissed the case on procedural grounds (360 F. Supp 2nd 1214, March 18, 2005). Wyoming appealed that decision, but the Tenth Circuit Court of Appeals agreed with the District Court decision on April 3, 2006 (442 F. 3rd 1262).

On October 30, 2001, we received a petition dated October 5, 2001, from the Friends of the Northern Yellowstone Elk Herd, Inc. (Friends Petition) that sought removal of the gray wolf from endangered status under the ESA (Karl Knuchel, P.C., A Professional Corporation Attorneys at Law, in litt., 2001a). Additional correspondence in late 2001 provided clarification that the petition only applied to the Montana, Wyoming, and Idaho population of gray wolf and that the petition requested full delisting of this population (Knuchel in litt. 2001b). Additionally, on July 19, 2005, we received a petition dated July 13, 2005, from the Office of the Governor, State of Wyoming and the Wyoming Game and Fish Commission (Wyoming Petition) to revise the listing status for the gray wolf by establishing the NRM DPS and concurrently removing the NRM DPS of gray wolf

from the Federal List of Endangered and Threatened Wildlife (Dave Freudenthal, Office of the Governor, State of Wyoming, 2005). On October 26, 2005, we published a finding that—(1) The Friends Petition failed to present a case for delisting that would lead a reasonable person to believe that the measure proposed in the petition may be warranted; and (2) the Wyoming Petition presented substantial scientific and commercial information indicating that the NRM gray wolf population may qualify as a DPS and that this potential DPS may warrant delisting (70 FR 61770). We considered the collective weight of evidence and initiated this 12-month status review (70 FR 61770; October 26, 2005).

On February 8, 2006, we published an advanced notice of proposed rulemaking (ANPR) announcing our intention to conduct rulemaking to establish a DPS of the gray wolf in the NRM and to remove that gray wolf DPS from the List of Endangered and Threatened Wildlife, if Wyoming adopts a State law and a State wolf management plan that is approved by the Service (71 FR 6634). This finding is based upon additional analysis and updates the information in the ANPR (71 FR 6634).

For detailed information on previous Federal actions impacting the NRM gray wolf population, see the February 8, 2006, February 8, 2006 ANPR (71 FR 6634). For additional information on previous Federal actions for gray wolves beyond the NRM, see the April 1, 2003, "Final Rule To Reclassify and Remove the Gray Wolf from the List of Endangered and Threatened Wildlife in Portions of the Conterminous United States" (2003 Reclassification Rule) (68 FR 15804).

Biology

For detailed information on the biology of the gray wolf see: (1) The "Background" section of the February 8, 2006, ANPR (71 FR 6634); and (2) the "Biology and Ecology of Gray Wolves" section of the 2003 Reclassification Rule (68 FR 15804; April 1, 2003).

Recovery

Conservation measures provided to species listed as endangered or threatened under the ESA include recovery actions, possible land acquisition, requirements for Federal protection, cooperation with the States, prohibitions against certain practices, and recognition by Federal, State, and private agencies, groups, and individuals. Most of these measures already have been successfully applied to gray wolves. For background on the

history of NRM wolf recovery, recovery planning (including defining appropriate recovery criteria), population monitoring, and cooperation and coordination with our partners in achieving recovery, see the "Recovery" section of the February 8, 2006, ANPR (71 FR 6634).

What follows is a summary of recovery progress by (1) State for Wyoming, Montana, and Idaho; and (2) recovery area. Both discussions include 2005 population estimates not available at the time the ANPR was published (71 FR 6634; February 8, 2006).

Recovery by State—We measure wolf recovery by the number of breeding pairs because wolf populations are maintained by packs that successfully raise pups. We use 'breeding pairs' to describe successfully reproducing packs (Service 1994; Bangs 2002). Breeding pairs are only measured in winter because most wolf mortality occurs in spring/summer/fall (illegal killing, agency control and disease/parasites) and winter is the beginning of the annual courtship and breeding season for wolves. Often we do not know if a specific pack actually contains an alpha pair and two pups in winter, but there is a strong correlation between wolf pack size then and its probability of being a breeding pair. The group size of packs of unknown composition in winter can be used to estimate their breeding pair status. Different habitat characteristics result in slightly different probabilities of breeding pair status in each state. Based upon the best scientific information currently available, in Wyoming, 10 groups of 5 wolves of unknown composition in winter would be the equivalent of 5.6 breeding pairs, 10 groups of 6 wolves would equate to 6.5 breeding pairs, etc. The probability of a pack of wolves having a 90% chance of being a breeding pair doesn't occur until there are at least 9 wolves in a pack in winter (Ausband 2006). In the past we had primarily used packs of known composition in winter to estimate the number of breeding pairs. However, now we can use the best information currently available and use pack size in winter as a surrogate to reliably identify breeding pairs and to better predict the effect of managing for certain pack sizes on wolf population recovery.

At the end of 2000, the NRM population first met its numerical and distributional recovery goal of a minimum of 30 "breeding pairs" (an adult male and an adult female wolf that have produced at least 2 pups that survived until December 31 of the year of their birth, during the previous breeding season) and over 300 wolves

well-distributed among Montana, Idaho, and Wyoming (68 FR 15804, April 1, 2003; Service et al. 2001). While absolute equitable distribution is not necessary, a well-distributed population throughout suitable habitat with no one State maintaining a disproportionately low number of packs or number of individual wolves is needed for recovery in a significant portion of its range. This minimum recovery goal was again exceeded in 2001, 2002, 2003, 2004, and 2005 (Service et al. 2002–2006). Because the recovery goal must be achieved for 3 consecutive years, the temporal element of recovery was not achieved until the end of 2002 (Service et al. 2003). By the end of 2005, the NRM wolf population had achieved its numerical and distributional recovery goal for 6 consecutive years (Service et al. 2001–2006; 68 FR 15804, April 1, 2003; 71 FR 6634, February 8, 2006).

In 2000, 8 breeding pairs and approximately 97 wolves were known to occur in Montana; 12 breeding pairs and approximately 153 wolves were known to occur in Wyoming; and 10 breeding pairs and 187 wolves were known to occur in Idaho (Service et al. 2001). In 2001, 97 reeding pairs and approximately 123 wolves were known to occur in Montana; 13 breeding pairs and approximately 189 wolves were known to occur in Wyoming; and 14 breeding pairs and 251 wolves were known to occur in Idaho (Service et al. 2002). In 2002, 17 breeding pairs and approximately 183 wolves were known to occur in Montana; 18 breeding pairs and approximately 217 wolves were known to occur in Wyoming; and 14 breeding pairs and 216 wolves were known to occur in Idaho (Service et al. 2003). In 2003, 10 breeding pairs and approximately 182 wolves were known to occur in Montana; 16 breeding pairs and approximately 234 wolves were known to occur in Wyoming; and 25 breeding pairs and 345 wolves were known to occur in Idaho (Service et al. 2004). In 2004, 15 breeding pairs and approximately 153 wolves were known to occur in Montana; 24 breeding pairs and approximately 260 wolves were known to occur in Wyoming; and 27 breeding pairs and 422 wolves were known to occur in Idaho (Service et al. 2005). In 2005, 19 breeding pairs and approximately 256 wolves were known to occur in Montana; 16 breeding pairs and approximately 252 wolves were known to occur in Wyoming; and 36 breeding pairs and 512 wolves were known to occur in Idaho, for a total of 71 breeding pairs and 1,020 wolves (Service et al. 2006).

Although we now measure recovery by State, biologically each recovery area

remains of some importance. Thus, the following section discusses recovery within each of the three major recovery areas. Because the recovery areas cross State lines, the population estimates sum differently.

Recovery in the Northwestern Montana Recovery Area—The Northwestern Montana Recovery Area (>49,728 square kilometers (km²) [>19,200 square miles (mi²)]) includes Glacier National Park; the Great Bear, Bob Marshall, and Lincoln Scapegoat Wilderness areas; and adjacent public and private lands in northern Montana and the northern Idaho panhandle. Reproduction first occurred in northwestern Montana in 1986. The natural ability of wolves to find and quickly recolonize empty habitat, the interim control plan, and the interagency recovery program combined to effectively promote an increase in wolf numbers. By 1996, the number of wolves had grown to about 70 wolves in 7 known breeding pairs. However, since 1997, the number of breeding groups and number of wolves has fluctuated widely, varying from 4–12 breeding pairs and from 49–130 wolves (Service et al. 2006). Our 1998 estimate was a minimum of 49 wolves in 5 known breeding pairs (Service et al. 1999). In 1999, and again in 2000, 6 known breeding pairs produced pups, and the northwestern Montana population increased to about 63 wolves (Service et al. 2000, 2001). In 2001, we estimated that 84 wolves in 7 known breeding pairs occurred; in 2002, there were an estimated 108 wolves in 12 known breeding pairs; in 2003, there were an estimated 92 wolves in 4 known breeding pairs; in 2004, there were an estimated 59 wolves in 6 known breeding pairs; and in 2005, there were an estimated 130 wolves in 11 known breeding pairs (Service et al. 2002, 2003, 2004, 2005, 2006).

The Northwestern Montana Recovery Area has sustained fewer wolves than the other recovery areas because there is less suitable habitat. Wolf packs in this area may be near their local social and biological carrying capacity. Some of the variation in our wolf population estimates for northwestern Montana is due to the difficulty of counting wolves in the areas thick forests. Wolves in northwestern Montana prey mainly on white-tailed deer (*Odocoileus virginianus*) and pack size is smaller, which also makes packs more difficult to detect (Bangs et al. 1998). Increased monitoring efforts in northwestern Montana by Montana Fish, Wildlife and Parks (MFWP) in 2005 were likely responsible for some of the sharp increase in the estimated wolf

population. The MFWP have led wolf management in this area since February 2004. It appears that wolf numbers in northwestern Montana are likely to fluctuate around 100 wolves. Since 2001, this area has maintained an average of nearly 96 wolves and about 8 known breeding pairs (Service et al. 2006).

Northwestern Montana's wolves are demographically and genetically linked to both the wolf population in Canada and in central Idaho (Pletscher et al. 1991; Boyd and Pletscher 1999). Wolf dispersal into northwestern Montana from both directions will continue to supplement this segment of the overall wolf population, both demographically and genetically (Boyd et al. in prep.; Forbes and Boyd 1996, 1997; Boyd et al. 1995).

Wolf conflicts with livestock have fluctuated with wolf population size and prey population density (Service et al. 2005). For example, in 1997, immediately following a severe winter that reduced white-tailed deer populations in northwestern Montana, wolf conflicts with livestock increased dramatically, and the wolf population declined (Bangs et al. 1998). Wolf numbers increased as wild prey numbers rebounded. Unlike YNP or the central Idaho Wilderness, northwestern Montana lacks a large core refugium that contains overwintering wild ungulates. Therefore, wolf numbers are not ever likely to be as high in northwestern Montana as they are in central Idaho or the GYA. However, the population has persisted for nearly 20 years and is robust today (Service et al. 2006). State management, pursuant to the Montana State wolf management plan, will ensure this population continues to persist (see Factor D).

Recovery in the Central Idaho Recovery Area—The Central Idaho Recovery Area (53,600 km² [20,700 mi²]) includes the Selway Bitterroot, Gospel Hump, Frank Church River of No Return, and Sawtooth Wilderness areas; adjacent, mostly Federal, lands in central Idaho; and adjacent parts of southwest Montana (Service 1994). In January 1995, 15 young adult wolves were captured in Alberta, Canada, and released by the Service in central Idaho (Bangs and Fritts 1996; Fritts et al. 1997; Bangs et al. 1998). In January 1996, an additional 20 wolves from British Columbia were released. Central Idaho contains the greatest amount of highly suitable wolf habitat compared to either northwestern Montana or the GYA (Oakleaf et al. 2006). In 1998, the central Idaho wolf population consisted of a minimum of 114 wolves, including 10 known breeding pairs (Bangs et al.

1998). By 1999, it had grown to about 141 wolves in 10 known breeding pairs (Service et al. 2000). By 2000, this population had 192 wolves in 10 known breeding pairs, and by 2001, it had climbed to about 261 wolves in 14 known breeding pairs (Service et al. 2001, 2002). In 2002, there were 284 wolves in 14 known breeding pairs; in 2003, there were 368 wolves in 26 known breeding pairs; in 2004, there were 452 wolves in 30 known breeding pairs, and by the end of 2005, there were 512 wolves in 36 known breeding pairs (Service et al. 2003, 2004, 2005, 2006). As in the Northwestern Montana Recovery Area, some of the Central Idaho Recovery Area's increase in wolf populations in 2005, was due to an increased monitoring effort by the Idaho Department of Fish and Game (IDFG). They began to actively help with wolf management in Idaho beginning in 2005, and have led these efforts since 2006.

Recovery in the Greater Yellowstone Area—The GYA recovery area (63,700 km² [24,600 mi²]) includes YNP; the Absaroka Beartooth, North Absaroka, Washakie, and Teton Wilderness areas (the National Park/Wilderness units); and adjacent public and private lands in Wyoming; and adjacent parts of Idaho and Montana (Service 1994). The wilderness portions of the GYA are rarely used by wolves due to those areas' high elevation, deep snow, and low productivity in terms of sustaining year-round wild ungulate populations. In 1995, 14 wolves from Alberta, representing 3 family groups, were released in YNP (Bangs and Fritts 1996; Fritts et al. 1997; Phillips and Smith 1996). Two of the three groups produced young in late April. In 1996, this procedure was repeated with 17 wolves from British Columbia, representing 4 family groups. Two of the groups produced pups in late April. Finally, 10 5-month-old pups removed from northwestern Montana were released in YNP in the spring of 1997 (Bangs et al. 1998).

By 1998, the wolves had expanded from YNP into the GYA with a population that consisted of 112 wolves, including 6 breeding pairs that produced 10 litters of pups (Service et al. 1999). The 1999 population consisted of 118 wolves, including 8 known breeding pairs (Service et al. 2000). In 2000, the GYA had 177 wolves, including 14 known breeding pairs, and there were 218 wolves, including 13 known breeding pairs, in 2001 (Service et al. 2001, 2002). In 2002, there were an estimated 271 wolves in 23 known breeding pairs; in 2003, there were an estimated 301 wolves in 21

known breeding pairs; in 2004, there were an estimated 335 wolves in 30 known breeding pairs; and in 2005, there were an estimated 325 wolves in 20 known breeding pairs (Service et al. 2003—2006).

Wolf numbers in the GYA were stable in 2005, but known breeding pairs dropped by 30 percent to only 20 pairs (Service et al. 2006). Most of this decline occurred in YNP (which declined from 171 wolves in 16 known breeding pairs in 2004, to 118 wolves in 7 breeding pairs in 2005 (Service et al. 2005, 2006)) and likely occurred because: (1) Highly suitable habitat in YNP is saturated with wolf packs; (2) conflict among packs appears to be limiting population density; (3) there are fewer elk (*Cervus canadensis*) than when reintroduction took place (White and Garrott 2006; Vucetich et al. 2005); and (4) a suspected, but as yet unconfirmed, outbreak of disease, canine parvovirus (CPV) or canine distemper, reduced pup survival to 20 percent in 2005 (Service et al. 2006; D. Smith, YNP, pers. comm. 2005). Additional significant growth in the National Park/Wilderness portions of the Wyoming wolf population is unlikely because suitable wolf habitat is saturated with resident wolf packs. Maintaining wolf populations above recovery levels in the GYA segment of the NRM area will likely depend on wolf packs living outside the National Park/Wilderness portions of Wyoming.

Discussion of the Petition

Wyoming's Petition advocated that the Service: (1) Establish a NRM DPS for the gray wolf composed of Montana, Idaho, and Wyoming; (2) eliminate the experimental population designations established in 1994; and (3) remove the gray wolf within the NRM DPS from protections under the ESA. The only substantive disagreements between the Service and Wyoming are: (1) Whether there is any emergency or urgency to delist wolves in Wyoming and (2) if Wyoming's regulatory framework is adequate to maintain the wolf population above its numerical and distribution recovery levels in Wyoming should the ESA protections be removed. The Wyoming Petition addressed six major issues.

1 Urgent Action Required—The Wyoming Petition argued that delisting was urgent and a priority because of alleged impacts to big game populations, economic impacts, introducing wolves into unnatural and fragmented habitats, and livestock depredation. Wyoming presented this information with an overall perspective that the number of wolves exceeded

recovery goals and that the wolf population and its impacts were larger those analyzed in the Service's 1994 environmental impact statement (EIS) on wolf reintroduction (Service 1994). The Wyoming Petition did not reveal any issues that were not previously anticipated or predicted in the 1994 EIS, nor does there currently appear to be any emergency regarding wolves or wolf management in Wyoming (White et al. 2005). In addition, the Wyoming segment of the wolf population was stable or slightly decreased in 2005, so the rate of predation on wild ungulates and livestock did not increase (Service et al. 2006).

The Wyoming Petition presented data indicating that nearly all Wyoming elk herds still exceeded State management objectives, but that herds in areas with wolves had lower cow/calf ratios than herds in areas without wolves. The Petitioner, however, did not address numerous other significant differences between these elk herds. All elk herds being preyed on by wolves are also being preyed on by grizzly bears (Barber et al. 2005). Elk herds that are living in areas without wolves have fewer large predators interacting with them. Elk herds with wolves typically summer in remote areas at high elevation, without access to as much agricultural forage, possibly making them more susceptible to severe winter or summer drought. Summer drought reduces forage for elk, which can greatly reduce calf production and survival (Cook et al. 2004). Some of Wyoming's comparisons made between elk herds with and without wolves seemed questionable; for example, the Wiggins Fork herd with an objective of 7,000 elk and the largest decrease in cow/calf ratios of any herd, was only being preyed upon by one small wolf pack. It is highly unlikely that one pack of approximately 10 wolves could have any measurable impact on overall herd size or calf ratios among 7,000 elk (White and Garrott 2006; Hamlin 2005). In addition, Wyoming and Montana (North Yellowstone elk herd) initiated deliberate elk herd reduction programs (cow elk hunts in winter) in the GYA to bring the herd sizes down to habitat management objectives and to alleviate landowner complaints about excessive elk competition with livestock for forage and crop damage (Hamlin 2005; Vucetich et al. 2005; White and Garrott 2006). Identifying wolf predation as the only, or primary, cause of differences in elk herd size or calf recruitment is misleading.

There is no doubt that wolves eat elk and that, in some situations and in combination with other factors, wolf

predation can affect the survival rate of adult cow elk, older calf elk, herd size, and the potential surplus available for human harvest. However, wolves are territorial, and wolf populations naturally regulate their density with prey density (Mech and Boitani 2003); areas with high prey numbers support more wolves, while areas with few prey support fewer wolves. Wolf populations expand by establishing new packs in new areas, which means that those new packs are preying on new elk and other ungulate herds. An example of this type of adjustment in wolf density was the dramatic decline of wolves in YNP's northern range in 2005, due to disease and social conflict in response, in part, to reduced elk density (Service et al. 2006). Low neonate calf survival is typically related to habitat quality and predation by bears (Barber et al. 2005). The potential impact of wolf predation to decrease some elk herds and reduce hunter harvest for cow elk was relatively accurately forecast in the EIS and has been the subject of a long series of subsequent research projects with various conclusions (Hamlin 2005; See Service et al. 2006 for additional references). Some studies indicted wolves were having minor impacts on elk herds in comparison to other factors (Vucetich et al. 2005), while others suggested wolf predation was a significant factor (White and Garrott 2006).

The Wyoming Petition also asserted that wolf predation reduced the number of elk that needed to be killed by hunters each year to bring herd size down to State management objectives and that reduced harvest had economic costs. This is consistent with the predictions in the 1994 EIS that wolf predation would result in less need to kill cow elk to reduce herd size to habitat carrying capacity and to alleviate private property damage (Service 1994). The EIS also predicted reduced hunter opportunity and the economic losses that would be associated with fewer elk.

Additionally, the Wyoming Petition only discussed the negative impact of wolf predation on select aspects of the economy (big game hunting and livestock depredation), not the entire economic effects of wolf restoration. The EIS analyzed the full range of costs and benefits of wolf reintroduction and concluded that the presence of wolves in YNP would generate many times more economic benefits than costs. A recent economic study in YNP indicted that the presence of wolves was currently generating over \$20 million per year in economic activity in Montana, Idaho, and Wyoming, similar to that forecasted (\$23 million in 1992)

in the EIS (Duffield et al. 2006). Wolf predation on ungulates (primarily elk) has a cost to some segments of society (some types of big game hunters), but those costs are far outweighed (over 10-fold) by the positive economic benefits to GYA States (Service 1994).

The Wyoming Petition proposed that wolves were reintroduced into unnatural and fragmented landscapes and that wolves were living in altered or marginally suitable habitats because of other human uses of the land. Suitable wolf habitat in North America can be simply characterized by moderate rates of human-caused mortality (due to low road density, forest cover, regulation of wolf killing by humans), adequate wild ungulates, and seasonal or low livestock density (Mladenoff and Stickle 1998; Larsen 2004; Oakleaf et al. 2006; Carroll et al. 2003, 2006). Wolves are habitat generalists and live in landscapes altered by humans throughout the world (Mech and Boitani 2003). Wolves listed under the ESA have lived in areas where human activities occur for decades—in the Midwest for over 30 years, the NRM for over 20 years, and the GYA and central Idaho for over 10 years. Wolf packs outside the Park Units in the Montana and Idaho portion of the GYA have occasional conflicts with livestock just like those in Wyoming. Wolf presence and human activity do not have to be mutually exclusive.

However, just as in the case of any other species of wildlife (i.e., mountain lions, bears, elk, deer, skunks, geese, etc.), there will be occasional conflicts with people that require management to address. Some areas of historic habitat are currently so modified by human impacts that they are unsuitable habitat for wolves (Carroll et al. 2003, 2006; Oakleaf et al. 2006). However, there are situations where livestock and wolves can both live in the same area, and do so throughout many parts of the Northern Hemisphere. The cost of co-existence is some livestock losses, some wolf losses, and management to reduce the rate of conflict (Woodroffe et al. 2006).

The Wyoming Petition discussed wintering elk feedground issues, moose habitat, and livestock depredation to support its perspective that wolves are largely incompatible with current commercial land-uses on public and private lands outside YNP. In Wyoming, many elk herds are fed in winter, vaccinated against disease, and compensation is paid to private landowners whose livestock they compete against for forage. The artificial feeding of concentrated wildlife has a host of benefits (high elk populations,

high hunter harvest, reduced private property damage in winter, and more food for large predators and scavengers) and costs (funding, diseases, property damage, road/human safety hazards, increased competition with other wild ungulates/wildlife, and habituation to humans) associated with it. Diseases are a particularly difficult problem on Wyoming feedgrounds because artificial crowding in winter increases disease transmission rates. A high proportion of elk are already infected with brucellosis, and chronic wasting disease is being documented increasingly closer to the Wyoming elk feedgrounds. However, these disease-related issues existed long before wolves were ever present and would still be present without wolves. Disease issues, not wolf predation, will likely continue to be the most serious issue facing winter feeding of high numbers of elk, but wolves have added to the complexity of managing wintering elk on feedgrounds (Jimenez and Stevenson 2003, 2004; Jimenez et al. 2005).

As discussed in the Wyoming Petition, moose populations were declining before wolves were present in the GYA, and previous Wyoming Game and Fish Department (WGFD) research indicated this was largely habitat-related. The Service is cooperating with ongoing research by the WGFD to investigate factors effecting moose populations in Wyoming. Wolves occasionally kill moose, but the effect of wolf predation on overall moose population status is unclear. It is unlikely, however, to have been the most important factor to date.

Wolves occasionally depredate livestock. This issue has been discussed in detail in the EIS, interagency annual reports (Service 1999–2006), and many publications (see Literature Cited in Service et al. 2006; Bangs et al. in press). Surprisingly, the rate of confirmed livestock depredations per 100 wolves (average of 14 cattle and 29 sheep killed for every 100 wolves in the GYA from 1995–2005) is actually lower than the EIS predicted (on average 100 wolves in the GYA were predicted to kill 19 cattle and 68 sheep annually) (Service 1994; Service et al. 2006). In 2005, the number of livestock depredations in Wyoming decreased, despite an increasing wolf population near livestock outside of the GYA Park Units. This may be a result of the aggressive agency control of problem wolves and the high level of problem wolf removal by the Service in Wyoming outside of the GYA Park Units. An average of 10% of the GYA wolf population was killed annually by agency control from 1995–2005, the highest rate in the NRM (Service et al.

2006). In Wyoming outside of YNP, about 20% of the wolf population was removed in 2004 and 2005 (Service et al. 2006). No information presented in the Wyoming Petition suggested there was any greater urgency or priority regarding wolf management issues in Wyoming than was anticipated in the 1994 EIS or than currently exists in Montana or Idaho. If wolves remain listed, all wolf/livestock conflict in Wyoming will continue to be aggressively dealt with by the Service.

2 Current Wolf Numbers and Distribution in the NRM DPS—The Wyoming Petition presented the Service's information on wolf numbers and distribution in 2004 to reaffirm the Service's position that the wolf population has fully achieved both its numerical and distributional recovery goals every year since 2002 (Service et al. 2006). The NRM wolf population has not significantly increased its overall outer distribution in Montana, Idaho, and Wyoming since 2000 (Service et al. 2000–2006) but has continued to grow and expand within that area and now occupies almost all suitable habitat in Montana, Idaho, and Wyoming (71 FR 6643).

3 Establish a NRM DPS—The Wyoming Petition listed reasons why a NRM DPS composed of all Montana, Idaho, and Wyoming is appropriate. In 2006, the Service proposed a very similar gray wolf DPS that would be composed of all of Montana, Idaho, and Wyoming; parts of eastern Washington and Oregon; and northcentral Utah (71 FR 6643). However, in its comments on the ANPR, Wyoming stated that it supported the analysis and justification for the NRM DPS proposed by the Service (public comment to 71 FR 6643).

4 Justification for Removing the Gray Wolf in the NRM DPS From the List of Endangered and Threatened Wildlife—Wyoming presented information from the 2003 Reclassification Rule (68 FR 15804) that the NRM wolf population was no longer threatened by habitat issues, overutilization, disease or predation, or other natural or manmade factors. The Service stated in the ANPR (71 FR 6643) that the numerical and distributional recovery of the wolf population is not jeopardized by these factors. Wyoming also agreed with the Service that if ESA protections were removed, the NRM wolf population in Montana and Idaho would be conserved above numerical and distributional recovery levels due to existing regulatory mechanisms. Both Montana and Idaho State law and their State management plans were consistent with one another and were approved by the

Service (Bangs 2004; Williams 2004; Hogan et al. 2005). However, the Service has determined that the regulatory framework established by Wyoming would not conserve Wyoming's numerical and distributional share of the NRM DPS wolf population above recovery levels (Williams 2004).

5 Adequacy of Regulatory Mechanisms in Wyoming—The adequacy of Wyoming's regulatory framework to maintain Wyoming's numerical and distributional share of the NRM wolf population is the primary area of disagreement between the Service and Wyoming. The Service's determination that Wyoming's regulatory framework is not adequate is fully discussed later in this finding (see Factor D below).

6 Peer Review of the Wyoming Gray Wolf Management Plan—The Service, in cooperation with the affected States, selected 12 recognized North American biological experts in wolf biology and management to review to Montana, Idaho, and Wyoming's State wolf management plans in the fall of 2003. The reviewers were not asked to examine other aspects of the State's regulatory framework, such as State laws, nor were they provided copies of these documents. Eleven reviews were completed. In general, most reviewers believed the coordinated implementation of all three State plans would be adequate to maintain 30 breeding pairs in the NRM. While Wyoming's Plan was thought the most extreme in terms of wolf control and minimizing wolf numbers and distribution, it was thought adequate by some reviewers, primarily because they believed that YNP would carry most of Wyoming's share of the NRM wolf population, and that the commitments in the Plan could be implemented under State law. The Wyoming Petition asserts that since a majority of peer reviewers believed that, in combination, the three State plans were adequate to numerically maintain a recovered wolf population in the NRM, the Service should approve Wyoming's plan and propose delisting of the NRM gray wolf DPS.

Four critical conditions have changed since the fall of 2003 and the peer review of the State Plans. These four conditions support the Service's decision to not approve Wyoming's regulatory framework (Bangs 2004; Williams 2004): (1) Our review of the State law questioned whether commitments made in the Plan could actually be implemented under the law; (2) the wolf population in YNP (most reviewers believed YNP would carry the bulk of Wyoming's share of the wolf

population) declined rapidly and dramatically by spring 2005; (3) in 2005, the Federal District Court in Oregon and Vermont ruled on a 2003 Service rule to establish two large DPSs and reclassify wolves in a Western and an Eastern DPS to threatened status (68 FR 15804). Those court rulings emphasized the distribution of the wolf population in historical and still suitable habitat was a critical component of determining if recovery had been achieved. Peer reviewers were not asked whether Wyoming's plan would maintain wolf pack distribution in suitable habitat outside of YNP; (4) in recent consultation with Montana, Idaho, Wyoming, the Nez Perce Tribe, Yellowstone National Park, and the University of Montana, the Service recognized that the relationship between wolf pack size in winter and breeding pairs was not a linear regression as argued in the Wyoming Petition. The Service in consultation with the above groups, established a method of estimating wolf population status that is scientifically sound and consistent with the Service's wolf breeding pair standard (discussed below in Recovery by State section) (Ausband 2006). However, the definition of a wolf pack in Wyoming law and Plan is not consistent with this analysis and the method in the Wyoming definition of a wolf pack would not allow the Wyoming segment of the wolf population to be maintained above recovery levels.

The Service considered the entire regulatory framework that could affect wolf population recovery, not just State management plans. The Service consistently reviewed the overall regulatory framework in Montana, Idaho, and Wyoming to determine whether their State laws and their State management plans were consistent with one another (Bangs 2004; Hogan 2005) (see detailed discussion under Factor D).

Conclusions—The Service agrees with the Wyoming Petition on several points regarding the removal of ESA protections for the NRM wolf population: (1) The population would not be threatened by four of the five categories of threats specified in section 4(a)(1) of the ESA—present or threatened destruction, modification, or curtailment of habitat or range; overutilization for commercial, recreational, scientific, or educational purposes; disease or predation; or other natural or manmade factors affecting its continued existence (71 FR 6634); and (2) the NRM wolf population in Montana and Idaho would be conserved above numerical and distributional

recovery levels because of the adequacy of existing regulatory mechanisms in Montana and Idaho. Both Montana's and Idaho's State laws and management plans were consistent with one another and were approved by the Service.

The Service disagrees with the Wyoming Petition regarding the adequacy of Wyoming's regulatory framework, and we have determined that Wyoming's current regulatory framework is not adequate to maintain Wyoming's numerical and distributional share of the NRM wolf population (See Factor D for a detailed discussion). This shortcoming means that the NRM DPS remains subject to a threat that leaves the DPS likely to become endangered in the foreseeable future.

Distinct Vertebrate Population Segment Policy Overview

Under the ESA, we consider for listing any species, subspecies, or, for vertebrates, any DPS of these taxa if there is sufficient information to indicate that such action may be warranted. The Service and the National Marine Fisheries Service (NMFS) adopted the Policy Regarding the Recognition of Distinct Vertebrate Population Segments under the ESA (DPS policy) and published it in the **Federal Register** on February 7, 1996 (61 FR 4722). This policy addresses the recognition of a DPS for potential listing, reclassification, and delisting actions. Under our DPS policy, three factors are considered in a decision regarding the establishment and classification of a possible DPS. These are applied similarly for additions to the Lists of Endangered and Threatened Wildlife and Plants, reclassification of already listed species, and removals from the lists. The first two factors—discreteness of the population segment in relation to the remainder of the taxon (i.e., *Canis lupus*) and the significance of the population segment to the taxon to which it belongs (i.e., *C. lupus*)—bear on whether the population segment is a valid DPS. If a population meets both tests, it is a DPS, and then we apply the third factor—the population segment's conservation status in relation to the ESA's standards for listing, delisting, or reclassification (i.e., is the population segment endangered or threatened).

A population segment of a vertebrate taxon may be considered discrete if it satisfies either one of the following conditions: (1) It is markedly separated from other populations of the same taxon (i.e., *Canis lupus*) as a consequence of physical, physiological, ecological, or behavioral factors (quantitative measures of genetic or morphological discontinuity may

provide evidence of this separation); or (2) it is delimited by international governmental boundaries within which differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of section 4(a)(1)(D) of the ESA. If we determine a population segment is discrete, we next consider available scientific evidence of its significance to the taxon (i.e., *C. lupus*) to which it belongs. Our DPS policy states that this consideration may include, but is not limited to, the following: (1) Persistence of the discrete population segment in an ecological setting unusual or unique for the taxon; (2) evidence that loss of the discrete population segment would result in a significant gap in the range of the taxon; (3) evidence that the discrete population segment represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside its historic range; and/or (4) evidence that the discrete population segment differs markedly from other populations of the species in its genetic characteristics.

Based on our analysis of the best scientific information available, wolves in the NRM area are discrete in relation to the remainder of the taxon (i.e., *Canis lupus*) in that: (1) The NRM wolf populations exhibit substantial geographic isolation from all other wolf populations in the lower 48 States far exceeding the DPS policy's first criterion for discreteness; and (2) the international boundary between the United States and Canada meets the second discreteness criterion due to differences in exploitation and conservation status (see the 2006 ANPR (71 FR 6634, February 8, 2006) for a detailed analysis). Based on our analysis of the best scientific information available, wolves in the NRM area appear to meet the criterion of significance in that NRM wolves exist in a unique ecological setting and their loss would represent a significant gap in the range of the taxon (see ANPR (71 FR 6634, February 8, 2006) for a detailed analysis).

Although this finding has determined that the NRM population of gray wolves (currently limited to portions of Wyoming, Idaho, and Montana) is both discrete from other wolf populations (found in the Great Lakes Region and the southwestern United States) and significant to the taxon, therefore qualifying as a DPS, actually designating a DPS requires an official rulemaking process. This finding does not initiate, nor complete, such a process. While the ANPR put forward our preferred DPS boundaries (assuming adequate

regulatory mechanisms can be assured), the ANPR also discussed and requested comments on several other alternatives being considered (see the PUBLIC COMMENTS SOLICITED section of the ANPR at 71 FR 6634; February 8, 2006). We intend to fully evaluate this issue, including suggestions submitted as public comments, before proposing a DPS designation. When our evaluation is complete, we will publish another document in the **Federal Register**.

While the ANPR suggested a preferred DPS that encompasses the eastern one-third of Washington and Oregon; a small part of north-central Utah; and all of Montana, Idaho, and Wyoming, this 12-month finding is limited to Montana, Idaho, and Wyoming. This finding focuses only on these three States because—(1) This action is a response to a petition that proposed an Idaho, Montana, and Wyoming DPS, (2) the most suitable wolf habitat in the NRM and all suitable habitat significant to maintaining a recovered wolf population is contained within these three States (Service 1987; Carroll et al. 2003, 2006; Oakleaf et al. 2006; 71 FR 6634), and (3) all “occupied wolf habitat” (defined in Factor A’s “Currently Occupied Habitat”) in the NRM is limited to portions of Idaho, Montana, and Wyoming.

Summary of Factors Affecting the Species

Section 4 of the ESA and regulations (50 CFR part 424) promulgated to implement the listing provisions of the ESA set forth the procedures for listing, reclassifying, and delisting species. Species may be listed as threatened or endangered if one or more of the five factors described in section 4(a)(1) of the ESA threaten the continued existence of the species. A species may be delisted, according to 50 CFR 424.11(d), if the best scientific and commercial data available substantiate that the species is neither endangered nor threatened because of (1) extinction, (2) recovery, or (3) error in the original data used for classification of the species.

A recovered population is one that no longer meets the ESA’s definition of threatened or endangered. The ESA defines an endangered species as one that is in danger of extinction throughout all or a significant portion of its range. A threatened species is one that is likely to become an endangered species in the foreseeable future throughout all or a significant portion of its range. Determining whether a species is recovered requires consideration of the same five categories of threats specified in section 4(a)(1). For species that are already listed as threatened or

endangered, this analysis of threats is an evaluation of both the threats currently facing the species and the threats that are reasonably likely to affect the species in the foreseeable future following the delisting or downlisting and the removal or reduction of the ESA’s protections.

For the purposes of this notice, we consider ‘foreseeable future’ to be 30 years. We use 30 years because it is a reasonable timeframe for analysis of future potential threats as they relate to wolf biology. Wolves were listed in 1973, and reached recovery levels in the NRM by 2002. It has taken about 30 years for the causes of wolf endangerment to be alleviated and for those wolf populations to recover. The average lifespan of a wolf in YNP is less than 4 years and even lower outside the Park (Smith et al. 2006). The average gray wolf breeds at 30 months of age and replaces itself in 3 years (Fuller et al. 2003). We used 10 wolf generations (30 years) to represent a reasonable biological timeframe to determine if impacts could be significant. Any serious threats to wolf population viability are likely to become evident well before a 30-year time horizon.

For the purposes of this notice, the “range” of the NRM wolf population is the area where viable populations of the species now exist. However, a species’ historic range is also considered because it helps inform decisions on the species’ status in its current range. While wolves historically occurred outside the areas currently occupied, large portions of this area are no longer able to support viable wolf populations.

We view significance of a portion of the range in terms of biological significance. A portion of a species’ range that is so important to the continued existence of the species that threats to the species in that area can threaten the viability of the species, subspecies, or DPS as a whole is considered to be a significant portion of the range. In regard to the NRM wolf population, the significant portions of the gray wolf’s range are those areas that are important or necessary for maintaining a viable, self-sustaining, and evolving representative metapopulation in order for the NRM wolf population to persist into the foreseeable future.

Our five-factor analysis follows.

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

We believe that impacts to suitable and potentially suitable habitat will occur at levels that will not significantly affect wolf numbers or distribution in

the NRMs as discussed in detail below. Occupied suitable habitat in key areas of Montana, Idaho, and Wyoming is secure and sufficient to provide for a self-sustaining population of gray wolves in the absence of any other threats. These areas include Glacier National Park, Teton National Park, YNP, numerous U.S. Forest Service (USFS) Wilderness areas, and other State and Federal lands. These areas will continue to be managed for high ungulate densities, moderate rates of seasonal livestock grazing, moderate-to-low road densities that will provide abundant native prey, low potential for livestock conflicts, and security from excessive unregulated human-caused mortality. The core recovery areas also are within proximity to one another and have enough public land between them to ensure sufficient connectivity to maintain the wolf population above recovery levels.

Suitable Habitat—Wolves once occupied or transited most, if not all, of Idaho, Montana, and Wyoming. However, much of the wolf’s historic range within this area has been modified for human use and is no longer suitable habitat. We used two relatively new models, Oakleaf et al. (2006) and Carroll et al. (2006), to help us gauge the current amount of suitable wolf habitat in the NRMs. Both models ranked areas as suitable habitat if they had characteristics that suggested they might have a 50 percent or greater chance of supporting wolf packs. Suitable wolf habitat in the NRMs was typically characterized by both models as public land with mountainous, forested habitat that contains abundant year-round wild ungulate populations, low road density, low numbers of domestic livestock that are only present seasonally, few domestic sheep, low agricultural use, and few people. Unsuitable wolf habitat was typically just the opposite (i.e., private land; flat open prairie or desert; low or seasonal wild ungulate populations; high road density; high numbers of year-round domestic livestock including many domestic sheep; high levels of agricultural use; and many people). Despite their similarities, there were substantial differences between these two models in their analysis area, layers, inputs, and assumptions. As a result, the Oakleaf et al. (2006) and Carroll et al. (2006) models predicted different amounts of theoretically suitable wolf habitat in Montana, Idaho, and Wyoming.

Oakleaf’s basic model was a more intensive effort that only looked at potential wolf habitat in Idaho, Montana, and Wyoming (Oakleaf et al. 2006). It used roads accessible to two-

wheel and four-wheel vehicles, topography (slope and elevation), land ownership, relative ungulate density (based on State harvest statistics), cattle (*Bos sp.*) and sheep (*Ovis sp.*) density, vegetation characteristics (ecoregions and land cover), and human density to comprise its geographic information system (GIS) layers. Oakleaf analyzed the characteristics of areas occupied and not occupied by NRM wolf packs through 2000 to predict what other areas in the NRM might be suitable or unsuitable for future wolf pack formation (Oakleaf et al. 2006). In total, Oakleaf et al. (2006) ranked 170,228 km² (65,725 mi²) as suitable habitat in Montana, Idaho, and Wyoming.

In contrast, Carroll's model analyzed a much larger area (all 12 western States and northern Mexico) in a less specific way (Carroll et al. 2006). Carroll's model used density and type of roads, human population density and distribution, slope, and vegetative greenness as "pseudo-habitat" to estimate relative ungulate density to predict associated wolf survival and fecundity rates (Carroll et al. 2006). The combination of the GIS model and wolf population parameters were then used to develop estimates of habitat theoretically suitable for wolf pack persistence. In addition, Carroll predicted the potential effect on suitable wolf habitat of increased road development and human density expected by 2025 (Carroll et al. 2006). Carroll et al. (2006) ranked 265,703 km² (102,588 mi²) as suitable habitat in Montana, Idaho, and Wyoming.

We believe that the Carroll et al. (2006) model tended to be more liberal in identifying suitable wolf habitat under current conditions than either the Oakleaf (et al. 2006) model or our field observations indicate is realistic, but Carroll's model provided a valuable relative measure across the western United States upon which comparisons could be made. The Carroll model did not incorporate livestock density into its calculations as the Oakleaf model did (Carroll et al. 2006; Oakleaf et al. 2006). However, this ignores the fact that in situations where livestock and wolves both live in the same area, there will be some livestock losses, some wolf losses, and some wolf removal to reduce the rate of conflict. During the past 20 years, wolf packs have been unable to persist in areas intensively used for livestock production, primarily because of agency control of problem wolves and illegal killing. This level of wolf mortality occurred despite wolves being protected under the ESA, including areas where wolves are listed as endangered.

Many of the more isolated primary habitat patches that the Carroll model predicted as currently suitable were predicted as unsuitable by the year 2025, indicating they were likely on the lower end of what ranked as suitable habitat in that model (Carroll et al. 2006). Because these types of areas were typically small and isolated from the core population segments, we do not believe they are currently suitable habitat based upon our data on wolf pack persistence for the past 10 years (Bangs et al. 1998; Service et al. 1999–2006).

Despite the substantial differences in each model's analysis area, layers, inputs, and assumptions, both models predicted that most suitable wolf habitat in the NRMs was in northwestern Montana, central Idaho, and the GYA, and in the area currently occupied by the NRM wolf population. They also indicated that these three areas were connected. However, northwest Montana and Idaho were more connected to each other than the GYA, and collectively the three cores areas were surrounded by large areas of unsuitable habitat.

These models are useful in understanding the relative proportions and distributions of various habitat characteristics and their relationships to wolf pack persistence, rather than as predictors of absolute acreages or areas that can actually be occupied by wolf packs. Additionally, both models generally support earlier predictions about wolf habitat suitability in the NRM (Service 1980, 1987, 1994). Because theoretical models only define suitable habitat as those areas that have characteristics with a 50 percent or more chance of supporting wolf packs, it is impossible to give an exact acreage of suitable habitat that can actually be successfully occupied by wolf packs. It is important to note that these areas also have up to a 50 percent chance of not supporting wolf packs.

We considered data on the location of suitable wolf habitat from a number of sources in developing our estimate of suitable wolf habitat in the NRMs. Specifically, we considered the locations estimated in the 1987 wolf recovery plan (Service 1987), the primary analysis areas analyzed in the 1994 EIS for the GYA (63,700 km² [24,600 mi²]) and central Idaho (53,600 km² [20,700 mi²]) (Service 1994), information derived from theoretical models by Carroll et al. (2006) and Oakleaf et al. (2006), our nearly 20 years of field experience managing wolves in the NRM, and the persistence of wolf packs since recovery has been achieved. Collectively, this evidence leads us to

concur with the Oakleaf et al. (2006) model's predictions that the most important habitat attributes for wolf pack persistence are forest cover, public land, high elk density, and low livestock density. Therefore, we believe that Oakleaf's calculations of the amount and distribution of suitable wolf habitat available for persistent wolf pack formation, in the parts of Montana, Idaho, and Wyoming analyzed, represents the most reasonably realistic prediction of suitable wolf habitat in Montana, Idaho, and Wyoming.

Currently Occupied Habitat—The area "currently occupied" by the NRM wolf population was calculated by drawing a line around the outer points of radio-telemetry locations of all known wolf pack (n=110) territories in 2004 (Service et al. 2005). We defined occupied wolf habitat as that area confirmed as being used by resident wolves to raise pups or that is consistently used by two or more territorial wolves for longer than 1 month (Service 1994). Although we relied upon 2004 wolf monitoring data (Service et al. 2005), the overall distribution of wolf packs has been similar since 2000, despite a wolf population that has more than doubled (Service et al. 2001–2006). Because the States must commit to maintain a wolf population above the minimum recovery levels (first achieved in 2000), we expect this general distribution will be maintained. Occupied habitat changed little from 2004 (275,533 km² [106,384 mi²]) to 2005 (260,535 km² [100,593 mi²]) (Service et al. 2006), so we relied on the Montana, Idaho, and Wyoming portions of our analysis from the ANPR for this 12-month finding.

We included areas between the core recovery segments as occupied wolf habitat even though wolf packs did not persist in certain portions of it. While models ranked some of it as unsuitable habitat, those intervening areas are important to maintaining the metapopulation structure since dispersing wolves routinely travel through those areas (Service 1994; Bangs 2002). This would include areas such as the Flathead Valley and other smaller valleys intensively used for agriculture, and a few of the smaller, isolated mountain ranges surrounded by agricultural lands in west-central Montana.

As of the end of 2004, we estimate approximately 275,533 km² (106,384 mi²) of occupied habitat in parts of Montana (125,208 km² [48,343 mi²]), Idaho (116,309 km² [44,907 mi²]), and Wyoming (34,017 km² [13,134 mi²]) (Service et al. 2005). As noted above, we are focusing on occupancy limited to

these three States and including both suitable and unsuitable areas (especially in the areas between wolf pack territories). Although currently occupied habitat includes some prairie (4,488 km² [1,733 mi²]) and some high desert (24,478 km² [9,451 mi²]), wolf packs did not use these habitat types successfully (Service et al. 2005). Since 1986, no persistent wolf pack has had a majority of its home range in high desert or prairie habitat. Landownership in the occupied habitat area is 183,485 km² (70,844 mi²) Federal (67 percent); 12,217 km² (4,717 mi²) State (4.4 percent); 3,064 km² (1,183 mi²) tribal (1.7 percent); and 71,678 km² (27,675 mi²) private (26 percent) (Service et al. 2005).

We determined that the current wolf population resembles a three-segment metapopulation and that the overall area used by the NRM wolf population has not significantly expanded its range since the population achieved recovery. This indicates there is probably limited suitable habitat within Montana, Idaho, and Wyoming for the NRM wolf population to expand significantly beyond its current borders. Carroll's model predicted that 165,503 km² (63,901 mi²) of suitable habitat (62 percent) was within the occupied area; however, the model's remaining potentially suitable habitat (38 percent) in Montana, Idaho, and Wyoming was often fragmented and in smaller, more isolated patches (Carroll et al. 2006). Suitable habitat within the occupied area, particularly between the population segments, is important to maintain the overall population. Habitat on the outer edge of the metapopulation is insignificant to maintaining the NRM wolf population's viability.

Oakleaf et al. (2006) predicted that roughly 148,599 km² (57,374 mi²) or 87 percent of Wyoming, Idaho, and Montana's suitable habitat was within the area we describe as the area currently occupied by the NRM wolf population. Substantial threats to this area would have the effect of threatening the viability of the NRM wolf population. These core areas are necessary for maintaining a viable, self-sustaining, and evolving representative metapopulation in order for the NRM wolf population to persist into the foreseeable future. We believe the remaining unoccupied, roughly 13 percent, of theoretical suitable wolf habitat (as described by Oakleaf et al. [2006]) is unimportant to maintaining the recovered wolf population. We nevertheless considered potential threats to this area.

The requirement that Montana, Idaho, and Wyoming each maintain at least 10

breeding pairs and 100 wolves in mid-winter ensures long-term viability of the NRM gray wolf population. The NRM wolf population occupies nearly 100 percent of the recovery areas recommended in the 1987 recovery plan (i.e., the central Idaho, the GYA, and the northwestern Montana recovery areas) (Service 1987) and nearly 100 percent of the primary analysis areas (the areas where suitable habitat was believed to exist and the wolf population would live) analyzed for wolf reintroduction in central Idaho and the GYA (Service 1994).

Potential Threats Affecting Suitable and Currently Occupied Habitat—Establishing a recovered wolf population in the NRMs did not require land-use restrictions or curtailment of traditional land-uses because there was enough suitable habitat, enough wild ungulates, and sufficiently few livestock conflicts to recover wolves under existing conditions (Bangs et al. 2004). We do not believe that any traditional land-use practices in the NRMs need be modified to maintain a recovered NRM wolf population into the foreseeable future. We do not anticipate overall habitat changes in the NRMs occurring at a magnitude that will threaten wolf recovery in the foreseeable future because 70 percent of the suitable habitat is in public ownership that is managed for multiple uses, including maintenance of viable wildlife populations (Carroll et al. 2003; Oakleaf et al. 2006).

The GYA and central Idaho recovery areas, 63,714 km² (24,600 mi²) and 53,613 km² (20,700 mi²), respectively, are primarily composed of public lands (Service 1994) and are the largest contiguous blocks of suitable habitat within Idaho, Montana, and Wyoming. Central Idaho and the GYA provide secure habitat and abundant ungulate populations with about 99,300 ungulates in the GYA and 241,400 in central Idaho (Service 1994). These areas provide optimal suitable habitat to help maintain a viable wolf population (Service 1994). The central Idaho recovery area has 24,281 km² (9,375 mi²) of designated wilderness at its core (Service 1994). The GYA recovery area has a core including over 8,094 km² (3,125 mi²) in YNP and, although less useful to wolves due to high elevation, about 16,187 km² (6,250 mi²) of designated wilderness (Service 1994). These areas are in public ownership, and no foreseeable habitat-related threats would prevent them from anchoring a wolf population that exceeds recovery levels.

While the northwestern Montana recovery area (>49,728 km² [>19,200

mi²]) (Service 1994) also has a core of suitable habitat (Glacier National Park and the Bob Marshall Wilderness Complex), it is not as high quality, as large, or as contiguous as that in either central Idaho or GYA. The primary reason for this is that ungulates do not winter throughout the area because it is higher in elevation. Most wolf packs in northwestern Montana live west of the Continental Divide, where forest habitats are a fractured mix of private and public lands (Service et al. 1999–2006). This exposes wolves to higher levels of human-caused mortality, and thus this area supports smaller and fewer wolf packs. Wolf dispersal into northwestern Montana from the more stable resident packs in the core protected area (largely the North Fork of the Flathead River along the eastern edge of Glacier National Park and the few large river drainages in the Bob Marshall Wilderness Complex) helps to maintain that segment of the NRM wolf population. Wolves also disperse into northwestern Montana from Canada and some packs have trans-boundary territories, helping to maintain the NRM population (Boyd et al. 1995). Conversely, wolf dispersal from northwestern Montana into Canada, where wolves are much less protected, continues to draw some wolves into vacant or low density habitats in Canada where they are subject to legal hunting (Bangs et al. 1998). The trans-boundary movements of wolves and wolf packs led to the establishment of wolves in Montana, and will continue to have an overall positive effect on wolf genetic diversity and demography in the northwest Montana segment of the NRM wolf population.

Within occupied suitable habitat, enough public land exists so that NRM wolf populations can be safely maintained above recovery levels. Important suitable wolf habitat is in public ownership, and the States and Federal land-management agencies are likely to continue to manage habitat that will provide forage and security for high ungulate populations, sufficient cover for wolf security, and low road density. Carroll et al. (2003, 2006) predicted future wolf habitat suitability under several scenarios through 2025, including increased human population growth and road development. Those threats were not predicted to alter wolf habitat suitability in Montana, Idaho, and Wyoming enough to cause the wolf population to fall below recovery levels.

The recovery plan (Service 1987), the metapopulation structure recommended by the 1994 EIS (Service 1994), and subsequent investigations (Bangs 2002) recognize the importance of some

habitat connectivity between northwestern Montana, central Idaho, and the GYA. There appears to be enough habitat connectivity between occupied wolf habitat in Canada, northwestern Montana, Idaho, and (to a lesser extent) the GYA to ensure exchange of sufficient numbers of dispersing wolves to maintain demographic and genetic diversity in the NRM wolf metapopulation (Oakleaf et al. 2006; Carroll et al. 2006; Wayne et al., 2005; Boyd et al. in prep.). To date, from radio-telemetry monitoring, we have documented routine wolf movement between Canada and northwestern Montana (Pletscher et al. 1991; Boyd and Pletscher 1999), occasional wolf movement between Idaho and Montana, and at least 11 wolves have traveled into the GYA (Wayne et al., 2005; Boyd et al. 1995; Boyd et al. in prep.). Because we know only about the 30 percent of the wolf population that has been radio-collared, additional dispersal has undoubtedly occurred. This demonstrates that current habitat conditions allow dispersing wolves to occasionally travel from one recovery area to another. Finally, the Montana State plan (the key State regarding connectivity) commits to maintaining natural connectivity to ensure the genetic integrity of the NRM wolf population by promoting land uses, such as traditional ranching, that enhance wildlife habitat and conservation.

Another important factor in maintaining wolf populations is the native ungulate population. Wild ungulate prey in these three areas are composed mainly of elk, white-tailed deer, mule deer (*Odocoileus hemionus*), moose (*Alces alces*), and (only in the GYA) bison (*Bison bison*). Bighorn sheep (*Ovis canadensis*), mountain goats (*Oreamnos americanus*), and pronghorn antelope (*Antilocapra americana*) also are common but not important, at least to date, as wolf prey. In total, 100,000–250,000 wild ungulates are estimated in each NRM State where wolf packs currently exist (Idaho, Montana, and Wyoming) (Service 1994). All three States have managed resident ungulate populations for decades and maintain them at densities that would easily support a recovered wolf population. There is no foreseeable condition that would cause a decline in ungulate populations significant enough to threaten the recovered status of the NRM wolf population.

Cattle and sheep are at least twice as numerous as wild ungulates even on public lands (Service 1994). The only areas large enough to support wolf

packs, but lacking livestock grazing, are YNP, Glacier National Park, some adjacent United States Forest Service (USFS) Wilderness areas, and parts of wilderness areas in central Idaho and northwestern Montana. Consequently, many wolf pack territories have included areas used by livestock, primarily cattle. Every wolf pack outside these areas has interacted with some livestock, primarily cattle. Livestock and livestock carrion are routinely used by wolves, but management discourages chronic use of livestock as prey. Conflict between wolves and livestock has resulted in the annual removal of some wolves (Bangs et al. 1995, 2004, 2005, 2006 in press; Service et al. 2006). This is discussed further under Factors D and E.

Unoccupied Suitable Habitat—Habitat suitability modeling indicates the NRM core recovery areas are atypical of other habitats in the western United States because suitable habitat in those core areas occurs in such large contiguous blocks (Service 1987; Larson 2004; Carroll et al. 2006; Oakleaf et al. 2006). It is likely that without core refugia areas, like YNP and the central Idaho wilderness, that provide a steady influx of dispersing wolves, other potentially suitable wolf habitat would not be capable of sustaining wolf packs. Some habitat that is ranked by models as suitable that is adjacent to core refugia, like central Idaho, may be able to support wolf packs, while some theoretically suitable habitat that is farther away from a strong source of dispersing wolves may not be able to support persistent packs. This fact is important to consider as suitable habitat, as defined by the Carroll (et al. 2006) and Oakleaf (et al. 2006) models, still only has a 50 percent or greater chance of being successfully occupied by wolf packs and significantly contributing to overall population recovery. Therefore, not all habitat predicted by models as suitable habitat can be successfully occupied by wolf packs.

Strips and smaller (less than 2,600 km² [1,000 mi²]) patches of theoretically suitable habitat (Carroll et al. 2006; Oakleaf et al. 2006) (typically isolated mountain ranges) often possess higher mortality risk for wolves because of their enclosure by, and proximity to, areas of high mortality risk. This phenomenon, in which the quality and quantity of suitable habitat is diminished because of interactions with surrounding less-suitable habitat, is known as an edge effect (Mills 1995). Edge effects are exacerbated in small habitat patches with high perimeter-to-area ratios (i.e., those that are long and

narrow, like isolated mountain ranges) and in long-distance dispersing species, like wolves, because they are more likely to encounter surrounding unsuitable habitat (Woodroffe and Ginsberg 1998). This suggests that even though some habitat outside the core areas may rank as suitable in models, it is unlikely to actually be successfully occupied by wolf packs. For these reasons, we believe that the NRM wolf population will remain centered around the three recovery areas. These core population segments will continue to provide a constant source of dispersing wolves into surrounding areas, supplementing wolf packs in adjacent but less secure suitable habitat.

Therefore, we do not foresee that impacts to suitable and potentially suitable habitat will occur at levels that will significantly affect wolf numbers or distribution or affect population recovery and long-term viability in the NRMs. Occupied suitable habitat is secured by core recovery areas in northwestern Montana, central Idaho, and the GYA. These areas include Glacier National Park, Teton National Park, YNP, numerous USFS Wilderness areas, and other State and Federal lands. These areas will continue to be managed for high ungulate densities, moderate rates of seasonal livestock grazing, moderate-to-low road densities associated with abundant native prey, low potential for livestock conflicts, and security from excessive unregulated human-caused mortality. The core recovery areas also are within proximity to one another and have enough public land between them to ensure sufficient connectivity.

No significant threats to the suitable habitat in these areas are known to exist. These areas have long been recognized as the most likely areas to successfully support 30 or more breeding pairs of wolves, comprising 300 or more individuals in a metapopulation with some genetic exchange between subpopulations (Service 1980, 1987, 1994; 71 FR 6634). Unsuitable habitat, and small, fragmented areas of suitable habitat away from these core areas, largely represent geographic locations where wolf packs cannot persist. Although such areas may have been historic habitat, these areas are not important or necessary for maintaining a viable, self-sustaining, and evolving representative wolf population in the NRMs into the foreseeable future. These areas are not a significant portion of the range for the NRM wolf population.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

As detailed below, overutilization for commercial, recreational, scientific, or educational purposes has not been a significant threat to the NRM wolf population, particularly in Idaho, Montana, and Wyoming. Delisting NRM wolves would not threaten recovery by excessive changes in mortality rates caused by commercial, recreational, scientific, or educational purposes. However, as discussed later in Factor D, there are potential concerns that human-caused mortality associated with management of delisted wolves in Wyoming as predatory animals would exceed sustainable levels.

Since their listing under the ESA, no gray wolves have been legally killed or removed from the wild in the NRMs for commercial, recreational, or educational purposes. In the NRMs, about 3 percent of the wolves captured for scientific research, nonlethal control, and monitoring have been accidentally killed (Service Weekly Reports 1995–2006). Some wolves may have been illegally killed for commercial use of the pelts and other parts, but we believe illegal commercial trafficking in wolf pelts or wolf parts is rare. Illegal capture of wolves for commercial breeding purposes also is possible, but we believe it to be extremely rare. We believe the potential for “take” prosecution provided for by the ESA has discouraged and minimized the illegal killing of wolves for commercial or recreational purposes. Although Federal penalties under the ESA will not apply if delisting were to be finalized, other Federal laws will still protect wildlife in National Parks and on other Federal lands (Service 1994). In addition, the States and Tribes have similar laws and regulations that protect game or trophy animals from overutilization for commercial, recreational, scientific, and educational purposes (See Factor D for a more detailed discussion of this issue and weblinks to applicable State laws and regulations). We believe these laws will continue to provide a strong deterrent to illegal killing by the public as they have been effective in State-led conservation programs for other resident wildlife. In addition, the State fish and game agencies, National Parks and other Federal agencies, and most Tribes have well-distributed experienced cadres of professional law enforcement officers to help enforce State, Federal, and Tribal wildlife regulations (See Factor D).

Scientific Research and Monitoring—From 1984 to 2005, the Service and our cooperating partners captured about 814

NRM wolves for monitoring, nonlethal control, and research purposes with 23 accidental deaths. If NRM wolves were delisted, the States, National Parks, and tribes would continue to capture and radio-collar wolves in the NRM area for monitoring and research purposes in accordance with their State wolf management plans (See Factor D). We expect that capture-caused mortality by Federal agencies, universities, States, and tribes conducting wolf monitoring, nonlethal control, and research will remain below 3 percent of the wolves captured, and will be an insignificant source of mortality to the wolf population.

Education—We are unaware of any wolves that have been legally removed from the wild for solely educational purposes in recent years. Wolves that are used for such purposes are usually the captive-reared offspring of wolves that were already in captivity for other reasons. However, States may get requests to place wolves that would otherwise be euthanized in captivity for research or educational purposes. Such requests have been, and will continue to be, rare; would be closely regulated by the State wildlife management agencies through the requirement for State permits for protected species; and would not substantially increase human-caused wolf mortality rates.

Commercial and Recreational Uses—In Idaho and Montana, any legal take after delisting would be regulated by State or tribal law so that it would not jeopardize each State’s share of the NRM wolf population (See Factor D). Currently, Wyoming State law does not regulate human-caused mortality to wolves throughout most of Wyoming (see Factor D for a more detailed description of this issue). This was one of the primary reasons the Service did not approve the final Wyoming Plan (WGFD 2003; Williams, 2004). Because wolves are highly territorial, wolf populations in saturated habitat naturally limit further population increases through wolf-to-wolf conflict or dispersal to unoccupied habitat. Wolf populations can maintain themselves despite a sustained human-caused mortality rate of 30 percent or more per year (Keith 1983; Fuller et al. 2003), and human-caused mortality can replace up to 70 percent of natural mortality (Fuller et al. 2003). Wolf pups can be successfully raised by other pack members and breeding individuals quickly replaced by other wolves (Brainerd et al. in prep.). This means that wolf populations are quite resilient to human-caused mortality if it can be regulated. Montana and Idaho would regulate human-caused mortality to

manipulate wolf distribution and overall population size to help reduce conflicts with livestock and, in some cases, human hunting of big game, just as they do for other resident species of wildlife. The States (except for Wyoming) and tribes would allow regulated public harvest of surplus wolves in the NRM wolf population for commercial and recreational purposes by regulated private and guided hunting and trapping. Such take and any commercial use of wolf pelts or other parts would be regulated by State or tribal law (See discussion of State laws and plans under Factor D). The regulated take of those surplus wolves would not affect wolf population recovery or viability in the NRM because the States of Montana and Idaho (and Wyoming, if its plan is approved in the future) would allow such take only for wolves that are surplus to achieving the State’s commitment to maintaining a recovered population. Regulated hunting and trapping are traditional and effective wildlife management tools that are to be applied to help achieve State and tribal wolf management objectives as needed.

In summary, the States have organizations and regulatory and enforcement systems in place to limit human-caused mortality of resident wildlife (except for wolves in Wyoming). Montana and Idaho’s State plans commit these States to regulate all take of wolves, including that for commercial, recreational, scientific, and educational purposes, and will incorporate any tribal harvest as part of the overall level of allowable take to ensure that the wolf population does not fall below the NRM wolf population’s numerical and distributional recovery levels. Wyoming’s regulatory framework would not adequately regulate human-caused mortality. The States and tribes have humane and professional animal handling protocols and trained personnel that will ensure that population monitoring and research results in few unintentional mortalities. Furthermore, the State permitting process for captive wildlife and animal care will ensure that few, if any wolves, will be removed from the wild solely for educational purposes.

C. Disease or Predation

As discussed in detail below, there are a wide range of diseases that may affect the NRM wolves. However, there are no indications that these diseases are of such magnitude that the population is in danger of extinction, particularly within Idaho, Montana, and Wyoming. Similarly, there are no indications that predation poses a

significant threat to the NRM wolf population. The rates of mortality caused by disease and predation are well within acceptable limits, and there is no reason to expect those rates to change appreciably if NRM wolves were delisted.

Disease—NRM wolves are exposed to a wide variety of diseases and parasites that are common throughout North America. Many diseases (viruses and bacteria, many protozoa and fungi) and parasites (helminthes and arthropods) have been reported for the gray wolf, and several of them have had significant, but temporary impacts during wolf recovery in the 48 conterminous States (Brand et al. 1995; Kreeger 2003). The EIS on gray wolf reintroduction identified disease impact as an issue, but did not evaluate it further, as it appeared to be insignificant (Service 1994). Infectious disease induced by parasitic organisms is a normal feature of the life of wild animals, and the typical wild animal hosts a broad multi-species community of potentially harmful parasitic organisms (Wobeser 2002). We fully anticipate that these diseases and parasites will follow the same pattern seen in other areas of North America (Brand et al. 1995; Bailey et al. 1995; Kreeger 2003) and will not significantly threaten wolf population viability. Nevertheless, because these diseases and parasites, and perhaps others, have the potential to impact wolf population distribution and demographics, careful monitoring (as per the State wolf management plans) will track such events. Should such an outbreak occur, human-caused mortality, except in Wyoming, would be regulated in an area and over an appropriate time period by the State to ensure populations are maintained above recovery levels.

Canine parvovirus (CPV) infects wolves, domestic dogs (*Canis familiaris*), foxes (*Vulpes*), coyotes (*Canis latrans*), skunks (*Mephitis mephitis*), and raccoons (*Procyon lotor*). The population impacts of CPV occur via diarrhea-induced dehydration leading to abnormally high pup mortality (Wisconsin Department of Natural Resources 1999). Clinical CPV is characterized by severe hemorrhagic diarrhea and vomiting; debility and subsequent mortality is a result of dehydration, electrolyte imbalances, and shock. CPV has been detected in nearly every wolf population in North America including Alaska (Bailey et al. 1995; Brand et al. 1995; Kreeger 2003), and exposure in wolves is thought to be almost universal. Currently, nearly 100 percent of the wolves handled by MFWP (M. Atkinson, MFWP, pers.

comm., 2005) had blood antibodies indicating exposure to CPV. CPV contributed to low pup survival in the northern range of YNP in 1999, and was suspected to have done so again in 2005 (Smith, pers. comm., 2005). However, the impact to the overall NRM wolf population was localized and temporary, as has been documented elsewhere (Bailey et al. 1995; Brand et al. 1995; Kreeger 2003).

Canine distemper is an acute, fever-causing disease of carnivores caused by a paramyxovirus (Kreeger 2003). It is common in domestic dogs and some wild canids, such as coyotes and foxes in the NRMs (Kreeger 2003). The seroprevalence in North American wolves is about 17 percent (Kreeger 2003). Nearly 85 percent of Montana wolf blood samples analyzed in 2005 had blood antibodies indicating non-lethal exposure to canine distemper (M. Atkinson, pers. comm., 2005). Mortality in wolves has only been documented in Canada (Carbyn 1992), Alaska (Peterson et al. 1984; Bailey et al. 1995), and in a single Wisconsin pup (Wydeven and Wiedenhoeft 2003). Distemper is not a major mortality factor in wolves, because despite exposure to the virus, affected wolf populations demonstrate good recruitment (Brand et al. 1995). Mortality from canine distemper has never been documented in NRM wolves despite the wolves' high exposure to it, but we suspect it contributed to the high pup mortality documented in the northern GYA in spring 2005 (Smith et al. 2006).

Lyme disease, caused by a spirochete bacterium, is spread primarily by deer ticks (*Ixodes dammini*). Host species include humans, horses (*Equus caballus*), dogs, white-tailed deer, mule deer, elk, white-footed mice (*Peromyscus leucopus*), eastern chipmunks (*Tamias striatus*), coyotes, and wolves. Lyme disease has not been reported from wolves beyond the Great Lakes regions (Wisconsin Department of Natural Resources 1999; Johnson et al. 1994). In those populations, it does not appear to cause adult mortality, but might be suppressing population growth by decreasing wolf pup survival.

Sarcoptic mange is caused by a mite (*Sarcoptes scabiei*) that infests the skin. The irritation caused by feeding and burrowing mites results in intense itching, resulting in scratching and severe fur loss, which can lead to mortality from exposure during severe winter weather or secondary infections (Kreeger 2003). Advanced sarcoptic mange can involve the entire body and can cause emaciation, decreased flight distance, staggering, and death (Kreeger 2003). In a long-term Alberta wolf study,

higher wolf densities were correlated with increased incidence of mange, and pup survival decreased as the incidence of mange increased (Brand et al. 1995). Mange has been shown to temporarily affect wolf population growth rates and perhaps wolf distribution (Kreeger 2003).

Mange has been detected in, and caused mortality to, wolves in the NRM, but almost exclusively in the GYA, and primarily east of the Continental Divide (Jimenez et al. in prep.). Those wolves likely contracted mange from coyotes or fox whose populations experience occasional outbreaks. In southwestern Montana, 8 percent of 12 packs in 2003, 24 percent of 17 packs in 2004, and 61 percent of 18 packs in 2005, showed evidence of mange, although not all members of every pack appeared infested (Jimenez et al. in prep.). In Wyoming, east of the YNP, 12.5 percent of 8 packs in 2003, 22 percent of 9 packs in 2003 and 2004, and 0 percent of 13 packs in 2005, showed evidence of mange (Jimenez et al. in prep.). Mange has not been confirmed in wolves from Idaho or northwestern Montana (Jimenez et al. in prep.). In packs with the most severe infestations, pup survival appeared low, and some adults died (Jimenez et al. in prep.). In addition, we euthanized three wolves with severe mange. We predict that mange in the NRMs will act as it has in other parts of North America (Brand et al. 1995; Kreeger 2003) and not threaten wolf population viability. Evidence suggests NRM wolves will not be infested on a chronic population-wide level given the recent response of Wyoming wolf packs that naturally overcame mange infestation.

Dog-biting lice (*Trichodectes canis*) commonly feed on domestic dogs, but can infest coyotes and wolves (Schwartz et al. 1983; Mech et al. 1985). The lice can attain severe infestations, particularly in pups. The worst infestations can result in severe scratching, irritated and raw skin, substantial hair loss particularly in the groin, and poor condition. While no wolf mortality has been confirmed, death from exposure and/or secondary infection following self-inflicted trauma, caused by the inflammation and itching, appears possible. For the first time, we confirmed dog-biting lice on two members of the Battlefield pack in the Big Hole Valley of southwestern Montana in 2005, and on a wolf in south-central Idaho in early 2006, but their infestations were not severe (Service Weekly Wolf Reports 2005–2006). Its source is unknown, but was likely domestic dogs.

Rabies, canine heartworm, blastomycosis, brucellosis, neosporosis, leptospirosis, bovine tuberculosis, canine coronavirus, hookworm, coccidiosis, and canine hepatitis have all been documented in wild gray wolves, but their impacts on future wild wolf populations are not likely to be significant (Brand et al. 1995; Johnson 1995a, b; Mech and Kurtz 1999; Wisconsin Department of Natural Resources 1999; Kreeger 2003). Canid rabies caused local population declines in Alaska (Ballard and Krausman 1997) and may temporarily limit population growth or distribution where another species, such as arctic foxes, act as a reservoir for the disease. Range expansion could provide new avenues for exposure to several of these diseases, especially canine heartworm, rabies, bovine tuberculosis, and possibly new diseases such as chronic wasting disease and West Nile virus, further emphasizing the need for vigilant disease monitoring programs.

Since several of the diseases and parasites are known to be spread by wolf-to-wolf contact, their incidence may increase if wolf densities increase. However, because wolf densities appear to be stabilizing (Service et al. 2006), wolf-to-wolf contacts will not likely lead to a continuing increase in disease prevalence. The wolves' exposure to these types of organisms may be most common outside of the core population areas, where domestic dogs are most common, and lowest in the core population areas because wolves tend to flow out of, not into, saturated habitats. Despite this dynamic, we assume that all NRM wolves have some exposure to all diseases and parasites in the system. Diseases or parasites have not been a significant threat to wolf population recovery in the NRM to date, nor are they likely to be.

In terms of future monitoring, each post-delisting management entity (State, tribal, and Federal) in the NRMs has wildlife agency specialists with sophisticated wildlife health monitoring protocols, including assistance from veterinarians, disease experts, and wildlife health laboratories. Each State has committed to monitor the NRM wolf population for significant disease and parasite problems. These State wildlife health programs often cooperate with Federal agencies and universities and usually have both reactive and proactive wildlife health monitoring protocols. Reactive strategies are the periodic intensive investigations after disease or parasite problems have been detected through routine management practices, such as pelt examination, reports from hunters, research projects, or population

monitoring. Proactive strategies often involve ongoing routine investigation of wildlife health information through collection and analysis of blood and tissue samples from all or a sub-sample of wildlife carcasses or live animals that are handled.

Natural Predation—There are no wild animals that routinely prey on gray wolves (Ballard et al. 2003). Occasionally wolves have been killed by large prey such as elk, deer, bison, and moose (Mech and Nelson 1989; Smith et al. 2000, 2006; Mech and Peterson 2003), but those instances are few. Since the 1980s, wolves in the NRM have died from wounds they received while attacking prey on about a dozen occasions (Smith et al. 2006). That level of mortality could not significantly affect wolf population viability or stability.

Since NRM wolves have been monitored, only three wolves have been confirmed killed by other large predators. Two adults were killed by mountain lions, and one pup was killed by a grizzly bear (Jimenez et al. 2006). Wolves in the NRM inhabit the same areas as mountain lions, grizzly bears, and black bears, but conflicts rarely result in the death of either species. Wolves evolved with other large predators, and no other large predators in North America, except humans, have the potential to significantly impact wolf populations.

Other wolves are the largest cause of natural predation among wolves. Numerous mortalities have resulted from territorial conflicts between wolves and about 3 percent of the wolf population is removed annually by territorial conflict in the NRM wolf population (Smith, pers. comm., 2005). Wherever wolf packs occur, including the NRM, some low level of wolf mortality will result from territorial conflict. Wolf populations tend to regulate their own density. Consequently territorial conflict is highest in saturated habitats. That cause of mortality is infrequent and does not result in a level of mortality that would significantly affect a wolf population's viability in the NRMs (Smith, pers. comm., 2005).

Human-caused Predation—Wolves are very susceptible to human-caused mortality, especially in open habitats such as those that occur in the western United States (Bangs et al. 2004). An active eradication program is the sole reason that wolves were extirpated from the NRM (Weaver 1978). Humans kill wolves for a number of reasons. In all locations where people, livestock, and wolves coexist, some wolves are killed to resolve conflicts with livestock (Fritts

et al. 2003). Occasionally, wolf killings are accidental (e.g., wolves are hit by vehicles, mistaken for coyotes and shot, or caught in traps set for other animals) (Service et al. 2005). Some of these accidental killings are reported to State, Tribal, and Federal authorities.

However, many wolf killings are intentional, illegal, and are never reported to authorities. Wolves do not appear particularly wary of people or human activity, and that makes them very vulnerable to human-caused mortality (Mech and Boitani 2003). In the NRM, mountain topography concentrates both wolf and human activity in valley bottoms (Boyd and Pletscher 1999), especially in winter, which increases wolf exposure to human-caused mortality. The number of illegal killings is difficult to estimate and impossible to accurately determine because they generally occur in areas with few witnesses. Often the evidence has decayed by the time the wolf's carcass is discovered or the evidence is destroyed or concealed by the perpetrators. While human-caused mortality, including illegal killing, has not prevented population recovery, it has affected NRM wolf distribution (Bangs et al. 2004). In the past 20 years, no wolf packs have successfully established and persisted solely in open prairie or high desert habitats that are used for intensive agriculture production (Service et al. 2006).

As part of the interagency wolf monitoring program and various research projects, up to 30 percent of the NRM wolf population has been radio-collared since the 1980s (Service Weekly Wolf Reports 1995–2006). The annual survival rate of mature wolves in northwestern Montana and adjacent Canada from 1984–1995 was 80 percent (Pletscher et al. 1997); 84 percent for resident wolves and 66 percent for dispersers. That study found 84 percent of wolf mortality to be human-caused. Bangs et al. (1998) found similar statistics, with humans causing most wolf mortality. Radio-collared wolves in the largest blocks of remote habitat without livestock, such as central Idaho and YNP, had annual survival rates around 80 percent (Smith et al. 2006). Wolves outside of large remote areas had survival rates as low as 54 percent in some years (D. Smith pers. comm., 2006). This is among the lower end of adult wolf survival rates that an isolated population can sustain (Fuller et al. 2003).

These survival rates may be biased. Wolves are more likely to be radio-collared if they come into conflict with people, so the proportion of mortality caused by agency depredation control

actions could be overestimated by radio-telemetry data. People who illegally kill wolves may destroy the radio-collar, so the proportion of illegal mortality could be underestimated. However, wolf populations have continued to expand in the face of ongoing levels of human-caused mortality.

An ongoing preliminary analysis of the survival data among NRM radio-collared wolves (n=716) (D. Smith, pers. comm., 2006) from 1984 through 2004 indicates that about 26 percent of adult-sized wolves die every year, so annual adult survival averages about 74 percent, which typically allows wolf population growth (Keith 1983; Fuller et al. 2003). Humans caused just over 75 percent of all radio-collared wolf deaths (D. Smith, pers. comm., 2005). This type of analysis does not estimate the cause or rate of survival among pups younger than 7 months of age because they are too small to radio-collar. Agency control of problem wolves and illegal killing are the two largest causes of wolf death; combined these causes remove nearly 20 percent of the population annually and are responsible for a majority of all known wolf deaths (Smith et al. 2006).

Wolf mortality from agency control of problem wolves (which includes legal take by private individuals under defense of property regulations in rules promulgated under section 10(j) of the ESA) is estimated to remove around 10 percent of adult radio-collared wolves annually. From 1995–2005, 30 wolves were legally killed by private citizens under Federal defense of property regulations (Service 1994; 70 FR 1285) that, except for Wyoming, are similar to State laws that would take effect and direct take of problem wolves by both the public and agencies if wolves were delisted. Agency control removed 396 problem wolves from 1987–2005, indicating that private citizen take (about 7 percent) under State defense of property laws would not significantly increase the overall rate of problem wolf removal (Bangs et al. 2006). Wolves have been illegally killed by shooting and poisoning, and radio collar tracking data indicate that illegal killing is as common a cause of wolf death as agency control, illegal killing removes around 10 percent the adult wolf population annually (D. Smith, pers. comm. 2006). A comparison of the overall wolf population and the number of problem wolves removed indicates agency control removes, on average, about 7 percent of the overall wolf population annually (Service et al. 2006). Wolf mortality under State and Tribal defense of property regulations incidental to other legal activities, agency control of problem wolves, and legal hunting and

trapping would be regulated by the States and Tribes (except in Wyoming) if the ESA's protections were removed. Regulated wolf mortality is to be managed so it would not reduce wolf numbers or distribution below recovery levels. This issue is discussed further below under Factor D.

The overall causes and rates of annual wolf mortality vary based upon a wide number of variables. Wolves in higher quality suitable habitat, such as remote, forested areas with few livestock (like National Parks), have higher survival rates. Wolves in unsuitable habitat and areas without substantial refugia have higher overall mortality rates. Mortality rates also vary depending on whether the wolves are resident pack members or dispersers, if they have a history with livestock depredation, or have been relocated (Bradley et al. 2005). However, overall wolf mortality has been low enough from 1987 until the present time that the wolf population in the NRM has steadily increased. It is now at least twice as numerous as needed to meet recovery levels and is distributed throughout most suitable habitat (Service 1987, 1994).

If the NRM wolf population were to be delisted, State management would likely increase the mortality rate outside National Parks, National Wildlife Refuges, and Tribal reservations, from its current level of about 26 percent annually (D. Smith, pers. comm. 2006). Wolf mortality as high as 50 percent annually may be sustainable (Fuller et al. 2003). The States, except Wyoming, have the regulatory authorization and commitment to regulate human-caused mortality so that the wolf population remains above its numerical and distributional recovery goals. This issue is discussed further below under Factor D.

In summary, human-caused mortality to adult radio-collared wolves in the NRMs, which averages about 20 percent per year (D. Smith, pers. comm. 2006), still allowed for rapid wolf population growth. The protection of wolves under the ESA promoted rapid initial wolf population growth in suitable habitat. The States, except for Wyoming, have committed to continue to regulate human-caused mortality so that it does not reduce the wolf population below recovery levels. Except for Wyoming, the States have adequate laws and regulations (see Factor D). Each post-delisting management entity (State, Tribal, and Federal) has experienced and professional wildlife staff to ensure those commitments can be accomplished.

D. The Adequacy or Inadequacy of Existing Regulatory Mechanisms

To address this factor, we compare the current regulatory mechanisms within Idaho, Montana, and Wyoming to the future mechanisms that would provide the framework for wolf management after delisting. State and Tribal programs are designed to maintain a recovered wolf population while minimizing damage to that population by allowing for removal of wolves in areas of chronic conflict or in unsuitable habitat. The three States have proposed wolf management plans that would govern how wolves are to be managed if delisted. As discussed below, we have approved Idaho's and Montana's plans because these States have proposed management objectives that would likely maintain at least 10 breeding pairs and 100 wolves per State by managing for a safety margin of 15 packs in each State well into the foreseeable future. However, we have been unable to approve the Wyoming law and plan because it does not provide for sustainable levels of protection (Williams 2004).

Current Wolf Management

The 1980 and 1987 NRM wolf recovery plans (Service 1980, 1987) recognized that conflict with livestock was the major reason that wolves were extirpated and that management of conflicts was a necessary component of wolf restoration. The plans also recognized that control of problem wolves was necessary to maintain local public tolerance of wolves and that removal of so few wolves would not prevent the wolf population from achieving recovery. In 1988, the Service developed an interim wolf control plan that applied to Montana and Wyoming (Service 1988); the plan was amended in 1990 to include Idaho and eastern Washington (Service 1990). We analyzed the effectiveness of those plans in 1999, and revised our guidelines for management of problem wolves listed as endangered (Service 1999). Evidence showed that most wolves do not attack livestock, especially larger livestock such as adult horses and cattle, but wolf presence around livestock will result in some level of depredation (Bangs et al. 2005). Therefore, we developed a set of guidelines under which depredating wolves could be harassed, moved, or killed by agency officials (Service 1999). The control plans were based on the premise that agency wolf control actions would affect only a small number of wolves, but would sustain public tolerance for non-depredating wolves, thus enhancing the chances for

successful population recovery (Mech 1995). Our assumptions have proven correct, as wolf depredation on livestock and subsequent agency control actions have remained at low levels, and the wolf population has expanded its distribution and numbers far beyond, and more quickly than, earlier predictions (Service 1994; Service et al. 2006).

The conflict between wolves and livestock has resulted in the average annual removal of 7–10 percent of the wolf population (Bangs et al. 1995, 2004, 2005; Service et al. 2006; D. Smith, pers. comm., 2005). We estimate illegal killing removed another 10 percent of the wolf population, and accidental and unintentional human-caused deaths have removed 1 percent of the population annually (D. Smith pers. comm., 2006). Even with this level of mortality, populations have expanded rapidly (Service et al. 2006).

Wolves within the NRMs are classified as either endangered or members of a nonessential experimental population under section 10(j) of the ESA. Wolf control in the experimental population areas, as directed by the experimental population regulations (59 FR 60252, November 22, 1994; 70 FR 1285, January 6, 2005), is more liberal than in the areas where wolves are listed as endangered. These regulations specify which wolves can be designated as problem animals, what forms of control are allowed, and who can carry out control activities. In the area where wolves are listed as endangered, only designated agencies may conduct control under the conservative protocols established by the Service's (1999) wolf control plan.

Current wolf control consists of the minimum actions believed necessary to reduce further depredations, and includes a wide variety of nonlethal and lethal measures (Bangs and Shivik 2001; Bangs et al. 2004, 2005, 2006 in press; Bradley 2004). However, while helpful, nonlethal methods to reduce wolf-livestock conflict are often only temporarily effective (Bangs and Shivik 2001; Bangs et al. 2004, 2005, 2006 in press; Woodroffe et al. 2005) and, by themselves, do not offer effective long-term solutions to chronic livestock damage. For instance, relocation of problem wolves is typically ineffective at reducing conflicts or allowing problem wolves to contribute to population recovery if vacant suitable habitat is not available (Bradley et al. 2005). Since 2001, all suitable areas for wolves have been filled with resident packs, and consequently most wolves that repeatedly depredate on livestock are now removed from the population

(Service et al. 2006). Between 1987 and 2006, we removed 396 wolves and relocated wolves 117 times to reduce the potential for chronic conflicts with livestock (Service et al. 2006).

At the end of 2005, our analysis indicated that most of the suitable wolf habitat in the NRMs was occupied by resident wolf packs (Service et al. 2006). NRM wolf distribution has remained largely unchanged since the end of 2000 (Service et al. 2001–2006). If the wolf population continues to expand, wolves will increasingly disperse into unsuitable areas that are intensively used for livestock production. A higher percentage of wolves in those areas will become involved in conflicts with livestock, and a higher percentage of those wolves will probably be removed to reduce future livestock damage. Human-caused mortality would have to remove 34 percent or more of the wolf population annually before population growth would cease (Fuller et al. 2003). Preliminary wolf survival data from radio-telemetry studies suggests that adult wolf mortality resulting from conflict could be doubled to an average of 14–20 percent annually and still not significantly impact wolf population recovery (D. Smith, pers. comm., 2005). The State management laws and plans would balance the level of wolf mortality with the recovery goals in each State.

One of the most important factors affecting the level of wolf/livestock conflict and the need for wolf control is the availability of wild ungulate prey. Important wild ungulate prey in the NRMs are elk, white-tailed deer, mule deer, moose, and (only in the GYA) bison. A large decline in native ungulate populations could result in an increase in conflicts with livestock and the level of wolf control. However, we do not forecast changes in ungulate populations of a magnitude that could jeopardize wolf recovery. Maintenance of wild ungulate habitat is discussed under Factor A above.

Changes in livestock availability also have changed the rate of livestock depredations by wolves, thus necessitating control actions. Nearly 100,000 wild ungulates were estimated in the GYA and northwestern Montana, and 250,000 in central Idaho where wolf packs currently exist (Service 1994). However, domestic ungulates, primarily cattle and sheep, are typically twice as numerous in those same areas, even on public lands (Service 1994). The only areas large enough to support wolf packs where the prey is mostly wild ungulates are the GYA, Glacier National Park, adjacent USFS Wilderness areas, and parts of Wilderness areas in central

Idaho and northwestern Montana. Consequently, many wolf pack territories have included areas used by livestock, primarily cattle (Bradley 2004). This overlap between wolf pack territories and livestock has led to the conflict between wolves and livestock, but depredation control practices discourage chronic use of livestock as prey.

Other management control tools used for managing wolf conflict are using shoot-on-site permits to private landowners and allowing take of wolves in the act of attacking or molesting livestock, pets, or other domestic animals. Since 1995, only 30 experimental population wolves (7–8 percent of the 396 wolves removed for livestock depredations from 1987 to 2005) were legally shot by private landowners under shoot-on-sight permits in areas of chronic livestock depredation or as they attacked or harassed livestock (Bangs et al. 2006).

In the NRM wolf recovery area, reports of suspected wolf-caused damage to livestock are investigated by the United States Department of Agriculture's Animal and Plant Health Inspection Service, Wildlife Services (USDA–WS) specialists using standard techniques (Roy and Dorrance 1976; Fritts et al. 1992; Paul and Gipson 1994). If the investigation confirms wolf involvement, USDA–WS specialists conduct the wolf control measures that we specify. If the incident occurs in Idaho, USDA–WS also coordinates with Nez Perce Tribal personnel. Since the beginning of 2005, USDA–WS has coordinated and conducted wolf control in cooperation with MFWP and, since the beginning of 2006, with IDFG, who lead wolf management in their States under a cooperative agreement and a Memorandum of Agreement with the Service, respectively. All investigations of suspected wolf damage on Tribal lands and wolf control are conducted in full cooperation with, and under approval by, the affected Tribe. A private program has compensated ranchers full market value for confirmed, and one-half market value for probable, wolf kills of livestock and livestock guard animals (Defenders 2006; Fischer 1989). That program paid an average of about \$75,000 annually from 2000 to 2005 (Defenders 2006).

Regulatory Assurances Within Montana, Idaho, and Wyoming

In 1999, the Governors of Montana, Idaho, and Wyoming agreed that regional coordination in wolf management planning among the States, Tribes, and other jurisdictions would be necessary to ensure timely delisting.

They signed a Memorandum of Understanding to facilitate cooperation among the three States in developing adequate State wolf management plans so that delisting could proceed. In this agreement, all three States committed to maintain at least 10 breeding pairs and 100 wolves per State by managing for a safety margin of 15 packs in each State. The States were to develop their pack definitions to approximate the current breeding pair definition. Governors from the three States renewed that agreement in April 2002.

The wolf population in the NRM achieved its numerical and distributional recovery goals at the end of 2000. The temporal portion of the recovery goal was achieved at the end of 2002. Because the primary threat to the wolf population (human predation and other take) still has the potential to significantly impact wolf populations if not adequately managed, the Service needs regulatory assurances that the States will manage for sustainable mortality levels before we can remove ESA protections. Therefore, we requested that the States of Montana, Idaho, and Wyoming prepare State wolf management plans to demonstrate how they would manage wolves after the protections of the ESA were removed. The Service provided varying degrees of funding and assistance to the States while they developed their wolf management plans.

To provide the necessary regulatory assurances after delisting, we encouraged Montana, Idaho, and Wyoming to regulate human-caused mortality of wolves. Several issues key to our approval of State plans included: Regulations that would allow regulatory control of take; a pack definition biologically consistent with the Service's definition of a breeding pair; and the ability to realistically manage State wolf populations and the number of pairs/packs above recovery levels.

The final Service determination of the adequacy of those three State management plans was based on the combination of Service knowledge of State law, the State management plans, wolf biology, our experience managing wolves for the last 20 years, peer review of the State plans, and the States' response to peer review. Those State plans can be viewed at <http://westerngraywolf.fws.gov/>. After our analysis of the State laws, the State plans, and other factors, the Service determined that Montana and Idaho's laws and wolf management plans were adequate to assure the Service that their share of the NRM wolf population would be maintained above recovery levels. Therefore, we approved those

two State plans. However, we determined that problems with the Wyoming legislation and plan, and inconsistencies between the law and management plan, did not allow us to approve Wyoming's approach to wolf management (Williams, 2004).

Montana—The gray wolf was listed under the Montana Nongame and Endangered Species Conservation Act of 1973 (87–5–101 MCA). Senate Bill 163, passed by the Montana Legislature and signed into law by the Governor in 2001, establishes the current legal status for wolves in Montana. Upon Federal delisting, wolves would be classified and protected under Montana law as a "Species in Need of Management" (87–5–101 to 87–5–123). Such species are primarily managed through regulation of all forms of human-caused mortality in a manner similar to trophy game animals like mountain lions and black bears. The MFWP and the Commission would then finalize more detailed administrative rules, as is typically done for other resident wildlife, but they must be consistent with the approved Montana wolf plan and State law. Classification as a "Species in Need of Management" and the associated administrative rules under Montana State law create the legal mechanism to protect wolves and regulate human-caused mortality beyond the immediate defense of life/property situations. Some illegal human-caused mortality would still occur, but is to be prosecuted under State law and Commission regulations, which would tend to minimize any potential effect on the wolf population.

In 2001, the Governor of Montana appointed the Montana Wolf Management Advisory Council to advise MFWP regarding wolf management after the species is removed from the lists of Federal and State-protected species. In August 2003, MFWP completed a final EIS and recommended that the Updated Advisory Council alternative be selected as Montana's Final Gray Wolf Conservation and Management Plan (Montana 2003). See <http://www.fwp.state.mt.us> to view the MFWP Final EIS and the Montana Gray Wolf Conservation and Management Plan.

Under the MFWP management plan, the wolf population would be maintained above the recovery level of 10 breeding pairs in Montana by managing for a safety margin of 15 packs. Montana would manage problem wolves in a manner similar to the control program currently being utilized in the experimental population area in southern Montana, whereby landowners and livestock producers on public land can shoot wolves seen attacking livestock or dogs, and agency control of

problem wolves is incremental and in response to confirmed depredations. State management of conflicts would become more protective of wolves and no public hunting would be allowed when there were fewer than 15 packs. Wolves would not be deliberately confined to any specific areas of Montana, but their distribution and numbers would be managed adaptively based on ecological factors, wolf population status, conflict mitigation, and human social tolerance. The MFWP plan commits to implement its management framework in a manner that encourages connectivity among wolf populations in Canada, Idaho, GYA, and Montana to maintain the overall metapopulation structure. Montana's plan (Montana 2003) predicts that under State management, the wolf population would increase to between 328 and 657 wolves with approximately 27 to 54 breeding pairs by 2015.

An important ecological factor determining wolf distribution in Montana is the availability and distribution of wild ungulates. Montana has a rich, diverse, and widely distributed prey base on both public and private lands. The MFWP has and will continue to manage wild ungulates according to Commission-approved policy direction and species management plans. The plans typically describe a management philosophy that protects the long-term sustainability of the ungulate populations, allows recreational hunting of surplus game, and aims to keep the population within management objectives based on ecological and social considerations. The MFWP takes a proactive approach to integrate management of ungulates and carnivores. Ungulate harvest is to be balanced with maintaining sufficient prey populations to sustain Montana's segment of a recovered wolf population. Ongoing efforts to monitor populations of both ungulates and wolves will provide credible, scientific information for wildlife management decisions.

Wolves would be managed in the same manner as other resident wildlife designated as trophy game, whereby human-caused mortality would be regulated by methods of take, seasons, bag limits, areas, and conditions under which defense of property take could occur. In addition all agency control of problem wolves would be directed by MFWP. All forms of wolf take would be more restricted when there are 15 or fewer packs in the State and less restricted when there are more than 15 packs. By managing for 15 packs, MFWP would maintain a safety margin to assure that the Montana segment of the wolf population would be maintained

above the 10 breeding pair and 100 wolf minimum population goal. Wolf management would include population monitoring, routine analysis of population health, management in concert with prey populations, law enforcement, control of domestic animal/human conflicts, consideration of a wolf-damage compensation program, research, and information and public outreach.

State regulations would allow agency management of problem wolves by MFWP and USDA–WS; take by private citizens in defense of private property; and, when the population is above 15 packs, some regulated hunting of wolves. Montana wildlife regulations allowing take in defense of private property are similar to the 2005 experimental population regulations, whereby landowners and livestock grazing permittees can shoot wolves seen attacking or molesting livestock or pets as long as such incidents are reported promptly and subsequent investigations confirm that livestock were being attacked by wolves. The MFWP has enlisted and directed USDA–WS in problem wolf management, just as the Service has done since 1987.

When the Service reviewed and approved the Montana wolf plan, we stated that Montana's wolf management plan would maintain a recovered wolf population and minimize conflicts with other traditional activities in Montana's landscape. The Service has every confidence that Montana would implement the commitments it has made in its current laws, regulations, and wolf plan. In June 2005, MFWP signed a Cooperative Agreement with the Service, and it now manages all wolves in Montana subject to general oversight by the Service.

Idaho—The Idaho Fish and Game Commission (Idaho Commission) has authority to classify wildlife under Idaho Code 36–104(b) and 36–201. The gray wolf was classified as endangered until March 2005, when the Idaho Commission reclassified the species as a big game animal under Idaho Administrative Procedures Act 13.01.06.100.01.d. The big game classification would take effect upon Federal delisting, and until then, wolves will be managed under Federal status. As a big game animal, State regulations would adjust human-caused wolf mortality to ensure recovery levels are exceeded. Title 36 of the Idaho statutes currently has penalties associated with illegal take of big game animals. These rules are consistent with the legislatively adopted Idaho Wolf Conservation and Management Plan

(IWCMP) (IWCMP 2002) and big game hunting restrictions currently in place. The IWCMP states that wolves will be protected against illegal take as a big game animal under Idaho Code 36–1402, 36–1404, and 36–202(h).

The IWCMP was written with the assistance and leadership of the Wolf Oversight Committee established in 1992 by the Idaho Legislature. Many special interest groups including legislators, sportsmen, livestock producers, conservationists, and IDFG personnel were involved in the development of the IWCMP. The Service provided technical advice to the Committee and reviewed numerous drafts before the IWCMP was finalized. In March 2002, the IWCMP was adopted by joint resolution of the Idaho Legislature. The IWCMP can be found at: http://www.fishandgame.idaho.gov/cms/wildlife/wolves/wolf_plan.pdf.

The IWCMP calls for IDFG to be the primary manager of wolves after delisting; like Montana, to maintain a minimum of 15 packs of wolves to maintain a substantial margin of safety over the 10 breeding pair minimum; and to manage them as a viable self-sustaining population that will never require relisting under the ESA. Wolf take would be more liberal if there are more than 15 packs and more conservative if there are fewer than 15 packs in Idaho. The wolf population would be managed by defense of property regulations similar to those now in effect under the ESA. Public harvest would be incorporated as a management tool when there are 15 or more packs in Idaho to help mitigate conflicts with livestock producers or big game populations that outfitters, guides, and others hunt. The IWCMP allows IDFG to classify the wolf as a big game animal or furbearer, or to assign a special classification of predator, so that human-caused mortality can be regulated. In March 2005, the Idaho Commission proposed that, upon delisting, the wolf would be classified as a big game animal with the intent of managing wolves similar to black bears and mountain lions, including regulated public harvest when populations are above 15 packs. The IWCMP calls for the State to coordinate with USDA–WS to manage depredating wolves depending on the number of wolves in the State. It also calls for a balanced educational effort.

Elk and deer populations are managed to meet biological and social objectives for each herd unit according to the State's species management plans. The IDFG will manage both ungulates and carnivores, including wolves, to maintain viable populations of each.

Ungulate harvest would be focused on maintaining sufficient prey populations to sustain viable wolf and other carnivore populations and hunting. IDFG has conducted research to better understand the impacts of wolves and their relationships to ungulate population sizes and distribution so that regulated take of wolves can be used to assist in management of ungulate populations and vice versa.

The Mule Deer Initiative in southeast Idaho was implemented by IDFG in 2005, to restore and improve mule deer populations. Though most of the initiative lies outside current wolf range and suitable wolf habitat in Idaho, improving ungulate populations and hunter success will decrease negative attitudes toward wolves. When mule deer increase, some wolves may move into the areas that are being highlighted under the initiative. Habitat improvements within much of southeast Idaho would focus on improving mule deer conditions. The Clearwater Elk Initiative also is an attempt to improve elk numbers in the area of the Clearwater Region in north Idaho where currently IDFG has concerns about the health of that once abundant elk herd.

Wolves are currently classified as endangered under Idaho State law, but if delisted under the ESA, they would be classified and protected as big game under Idaho fish and game code. Human-caused mortality would be regulated as directed by the IWCMP to maintain a recovered wolf population. The Service has every confidence Idaho would implement the commitments it has made in its current laws, regulations, and wolf plan. In January 2006, the Governor of Idaho signed a Memorandum of Understanding with the Secretary of the Interior that provided the IDFG the power to manage all Idaho wolves.

Wyoming—In 2003, Wyoming passed a very specific and detailed State law that would designate wolves as “trophy game” in YNP, Grand Teton National Park, John D. Rockefeller Memorial Parkway, and the adjacent USFS designated Wilderness areas (Wyoming House Bill 0229) once the wolf is delisted from the ESA. A large portion of the area permanently designated as “trophy game” actually has little to no value to wolf packs because it is not suitable habitat for wolves and, thus, is rarely used (GYA wilderness, and much of eastern and southern YNP) (Jimenez 2006). Many of the wilderness areas, for example, are rarely used by wolves because of their high elevation, deep snow, and low ungulate productivity. The “trophy game” status would allow the Wyoming Game and Fish

Commission (Wyoming Commission) and Wyoming Game and Fish Department (WGFD) to regulate methods of take, hunting seasons, types of allowed take, and numbers of wolves that could be killed. Wolves in other parts of Wyoming could be classified as trophy game only when populations dipped below 7 packs outside of the National Park/Wilderness units and there were fewer than 15 packs in Wyoming. In this case, the Wyoming Commission would determine how large an area to designate as trophy game in order to reasonably ensure seven packs are located in Wyoming, primarily outside the National Park/Wilderness units, at the end of the calendar year.

The State law requires that when there are 7 or more wolf packs in Wyoming 'primarily' (this term is undefined) outside of National Park/Wilderness areas or there are 15 or more wolf packs anywhere in Wyoming, all wolves in Wyoming outside of the National Park/Wilderness units would be classified as predatory animals. When wolves are classified as a "predatory animal" they are under the jurisdiction of the Wyoming Department of Agriculture and may be taken by anyone, anywhere in the predatory animal area, at any time, without limit, and by any means (including shoot-on-sight; baiting; possible limited use of poisons; bounties and wolf-killing contests; locating and killing pups in dens including use of explosives and gas cartridges; trapping; snaring; aerial gunning; and use of other mechanized vehicles to locate or chase wolves down). Wolves are very susceptible to unregulated human-caused mortality, which would be the situation if they were to be designated as predatory animals. Wolves are unlike coyotes in that wolf behavior and reproductive biology results in wolves being extirpated in the face of extensive human-caused mortality. These types and levels of take would most likely prevent wolf packs from persisting in areas of Wyoming where they are classified as predatory, even in otherwise suitable habitat. Moreover, because many southern and eastern YNP packs leave the National Park/Wilderness areas in winter and regularly utilize habitat on non-wilderness public lands and some private lands, these packs would be subject to unregulated and unlimited human-caused mortality to the extent wolves are classified as predatory in these lands.

The above restrictions present the very real possibility that Wyoming would not be able to maintain its share of a recovered wolf population. For example, in 2004, under Wyoming Law,

the YNP wolf population (171 wolves in 16 confirmed breeding pairs) would have triggered predatory status outside the National Parks/Wilderness areas and allowed for possible elimination of all wolf packs outside YNP (89 wolves in 8 breeding pairs) (Service et al. 2005). In 2005, disease and other factors caused a natural reduction of the YNP wolf population to 118 wolves in 7 breeding pairs (Service et al. 2006). The year 2005 marked the first time successful wolf packs outside the National Park/Wilderness areas (134 wolves in 9 breeding pairs) contributed more to Wyoming's overall share of the recovered NRM wolf population than those in YNP (118 wolves in 7 breeding pairs) (Service et al. 2005, 2006). However, if all wolves outside the National Parks/Wilderness areas had been eliminated in 2004 or early 2005, the Wyoming segment of the NRM wolf population would have fallen 3 breeding pairs below the 10 breeding pair recovery level in Wyoming by the end of 2005 (Service et al. 2006).

The State law and plan calls for intensive monitoring using standard methods and a review of the Wyoming wolf population's status every 90 days. While WGFD would have authority to manage wolves when they are classified as trophy game, that authority would end if the number of packs increased to 15 in the State or if there were 7 packs primarily outside the National Park/Wilderness units (even if there were fewer than 15 packs in the State). In essence, as soon as WGFD met their management objective, their management authority would be removed by State law within a maximum of 90 days. Every time the wolf population exceeded the minimum levels, all wolves outside the National Park/Wilderness units would be designated as predatory animals and would be subjected to unregulated human-caused mortality which could drive the wolf population back down to, or below, the minimum level. We believe the real potential for flipping back and forth between predatory animal status and trophy game status would result in a program that would be nearly impossible to administer and enforce because of widespread public confusion about the changing wolf status.

Additionally, despite assurances that WGFD would regulate human-caused mortality if wolf populations fell below minimum levels, WGFD likely would still control problem wolves and their efforts at regulating human-caused mortality under those circumstances, particularly with the likely public confusion over the status of the wolf, do

not seem likely to be highly effective. In other words, whenever the wolf population would become low enough that WGFD would have the legal authority to regulate some forms of wolf mortality, WGFD would have a limited ability to prevent further declines in the wolf population. Attempting to manage a wolf population that is constantly maintained at minimum levels would likely result in the wolf population falling below recovery levels due to factors beyond WGFD's control.

An essential element to achieving the Service's recovery goal is our definition of a breeding pair: An adult male and an adult female wolf that have produced at least two pups during the previous breeding season that survived until December 31 of that year. Wyoming State law defined a pack as simply five wolves traveling together regardless of the group's composition. According to this definition, these wolves could be with or without offspring and could be traveling together at any time of year. The Wyoming plan adopted the same definition of pack that is in State law. Wyoming's State law and management plan also allows a pack of 10 or more wolves with 2 or 3 breeding females to count as 2 or 3 packs, respectively. The Wyoming definition of a pack and the 90-day evaluation of population status is inconsistent with wolf biology and how the Service has, and will, measure wolf population recovery. Wolf packs only breed and produce young once a year (April), so a wolf population can only increase once a year. If a pack's breeding adults are killed between February and April, the pack will not produce young for at least another year. If pups are killed, no more will be produced for another year. The Wyoming definition of a wolf pack would lead to greater use of the predatory animal designation and a minimal wolf population going into summer, when diseases and most human-caused wolf mortality occur, including that which WGFD could not regulate (control and illegal killing) even under trophy game status. For instance, there might be 15 groups of 5 or more wolves (which may or may not be "breeding pairs") going into summer, but as human-mortality and other mortality factors continued to operate, the population could decline below recovery levels at a time when the only opportunity for the population to recover that year had passed. In addition, 15 groups of 5 wolves of unknown status that are traveling together in winter is only equal to 8.4 breeding pairs because Wyoming data show that groups of 5 wolves traveling

together in winter only have a 0.56 probability of being a breeding pair in Wyoming (Ausband 2006).

Consider the following examples. First, in 1999 and 2005, pup production and survival declined significantly (Service et al. 2000, 2006). Because few pups survived, five wolves traveling together in winter would not have equated to an adult male and female with two pups on December 31. Second, from 2002 to 2005, mange infested some packs in Montana and Wyoming causing them to not survive the winter. In this situation, if five wolves traveling together in summer or fall were known to have mange, it would be incorrect to rely on them as a breeding pair since they would be unlikely to survive until December 31. Third, at the end of 2005, there were 16 breeding pairs in Wyoming under the current Service definition (discussed in the Recovery by State section above). But, under Wyoming's definition, even if it were used in mid-winter, there would have been 24 packs counted as breeding pairs, an overestimate of 50 percent. If Wyoming had been managing for 15 "packs" as they define them, there could have been fewer than 10 actual "breeding pairs" in Wyoming.

The State wolf management plan generally attempts to implement the State law, with some notable exceptions. Those exceptions make the plan appear more likely to conserve the wolf population above recovery levels than the law allows. Recognizing these inconsistencies, the WGFD Director requested that the Wyoming Attorney General's Office review Wyoming law regarding the classification of gray wolves as trophy game animals (Wyoming Attorney General in litt. 2003). The Attorney General's response stated that "the plain language of the Enrolled Act is in conflict and thus suffers from internal ambiguity." The letter states:

The noted ambiguities arise when there are either: (1) Less than seven (7) packs outside of the Parks, but at least fifteen (15) packs in the state, including the Parks; or, (2) at least seven (7) packs outside the Parks, but less than fifteen (15) packs in the state, including the Parks. W.S. § 23-1-304(b)(ii) states that the Commission shall maintain so-called "dual" classification, that is, maintain classification of the gray wolf as a predatory animal "if it determines there were at least seven (7) packs of gray wolves * * * primarily outside of [the Parks] * * * or at least fifteen (15) packs within this state, including [the Parks] * * *." (Emphasis added). If this sentence is read without consideration of the stated legislative goals, the following scenarios can occur: Scenario #1: 10 packs inside the Parks & 5 packs outside the Parks. Classify as a predatory

animal because at least 15 packs in the state. *This scenario leaves less than 7 packs outside of the Parks.* Scenario #2: 3 packs inside the Parks & 10 packs outside the Parks. Classify as a predatory animal because at least 7 packs outside the Parks. *This scenario leaves less than 15 packs total in the state.* These scenarios defeat the clearly identified legislative goals of maintenance of fifteen (15) packs in the state and maintenance of seven (7) packs outside the Parks.

The letter concludes:

The goals specified by the legislation may be preserved if W.S. 23-1-304(b) is construed in light of those legislatively defined goals. Stated another way, the language of W.S. 23-1-304(b) must not be read so restrictively as to prevent the Game and Fish Department from crafting a state management plan for gray wolves which achieves delisting and satisfies the other stated legislative goals. The alternative interpretation, constructing the language of W.S. 23-1-304(b) in its most restrictive light, will defeat these clearly identified legislative goals. Such a result would be contrary to Wyoming law.

The Wyoming Attorney General's Office thus determined that the Wyoming State law is internally inconsistent as a key operative provision (the requirement in § 23-1-304(b)(ii) to classify gray wolves as predatory if there are at least seven packs primarily outside the Parks or at least 15 packs within the entire state) conflicts with the legislative purpose of providing appropriate management to facilitate delisting of the wolf. The Attorney General's Office concluded that § 23-1-304(b) should be construed in light of this legislative goal to allow WGFD to craft a management plan that is inconsistent with the predatory animal classification requirements of § 304(b) if that is what is needed to prepare a plan that would achieve delisting. Notwithstanding the Attorney General's opinion, we are concerned that WGFD would have no authority to act contrary to the categorical requirements of an operative provision of the state law.

Furthermore, in the fall of 2003, the Service, in cooperation with the affected States, selected 12 recognized North American experts in wolf biology and management to review the Montana, Idaho, and Wyoming State wolf management plans. Eleven reviews were completed. While Wyoming's Plan was thought to be the most extreme in terms of wolf control and minimizing wolf numbers and distribution, some reviewers thought it was adequate, primarily because they assumed in error that the Wyoming definition of a pack was equivalent to the Service's current breeding pair standard (Ausband 2006), thought that YNP was likely to carry

most of Wyoming's share of the wolf population, and assumed that the commitments in the Plan could be implemented under State law. As noted above, the Service now views these three assumptions as unrealistic. Other important developments since these peer reviews include recent Federal District court rulings in Oregon and Vermont emphasizing the importance of suitable habitat in calculating the significant portion of the range occupied by wolves prior to changing the listing status, the decline of wolves in YNP, and an improved method of estimating wolf population status that demonstrated that earlier attempts to correlate pack size in winter with the probability of being a breeding pair were mathematically incorrect and are clearly inconsistent with the both Service's previous and current breeding pair standards.

The potential success of the current Wyoming law and wolf plan to maintain its share of wolves in the NRM is greatly dependant on YNP having at least eight breeding pairs. However, recent experience tells us this is an unrealistic expectation. In 2005, wolf numbers substantially declined in YNP (Service et al. 2006). CPV and/or distemper are suspected of causing low pup survival in the Park, and pack conflicts over territory appear to have reduced the number of wolves and packs in YNP from 16 breeding pairs and 171 wolves in 2004, to 7 breeding pairs and 118 wolves in 2005 (Service et al. 2006). In 2005, if each group of 5 or more wolves had been counted as a pack as Wyoming law defines a pack, there would have been a total of 24 "packs" in Wyoming, 11 inside YNP, and 13 outside YNP. It is likely that predatory animal status, if it had been implemented prior to the end of 2005, would have quickly reduced or eliminated the number and size of wolf packs outside YNP going into the summer and fall of 2005. The Wyoming segment of the wolf population would most likely have fallen below 10 breeding pairs (to only the 7 breeding pairs in YNP), and the distribution of wolf packs in suitable habitat in Wyoming outside the National Park/Wilderness units would have been significantly reduced. This could have occurred because the State definition of five wolves traveling together as constituting a pack would have prevented the WGFD Commission from enlarging the area designated as trophy game even though there could have been only 7 breeding pairs in the state. Also, Wyoming would have counted most wolf packs in YNP as breeding pairs even though they were

not because they experienced reproductive failure in 2005.

Wyoming State law allows no regulation of human-caused mortality until the population falls below 7 packs outside the Parks and there are less than 15 packs in Wyoming. The Wyoming Petition's claim that such extensive removal of wolves is unlikely, even if they receive no legal protection, is not supported given the past history of wolf extirpation. The WGFD needs to be given the regulatory authority to adaptively manage the species throughout suitable habitat in Wyoming, outside of the National Park/Wilderness units, to account for wide fluctuations in wolf population levels.

In conclusion, Wyoming State law defines a wolf pack in a manner that has little biological relationship to wolf recovery goals or population viability, minimizes opportunities for adaptive professional wildlife management by WGFD, confines wolf packs primarily to YNP, depends on at least eight National Park/Wilderness wolf packs to constitute most of the wolves in Wyoming, minimizes the number and distribution of wolves and wolf packs outside the National Park/Wilderness areas, and could lead the Wyoming wolf population to quickly slide below recovery goals. Additionally, Wyoming State law would prohibit WGFD from responding in a timely and effective manner should modification in State management of wolves be needed to prevent the population from falling below the recovery levels of at least 10 breeding pairs and 100 wolves for each of the 3 core States. Based on these inadequacies, the Service cannot reasonably be assured that Wyoming's State law would allow its wolf management plan to maintain the Wyoming segment of the wolf population above recovery levels or maintain an adequate distribution of the Wyoming segment of the tri-State wolf population.

Tribal Plans—Currently no wolf packs live on, or are entirely dependent on, Tribal lands for their existence in the NRM. About 4,696 km² (1,813 mi²) (2 percent) of all occupied habitat in the NRM is Tribal land (Service 2006). Therefore, while Tribal lands can contribute some habitat for wolf packs in the NRM, they will be relatively unimportant to maintaining a recovered wolf population in the NRM. Many wolf packs live in areas of public land where Tribes have various treaty rights, such as wildlife harvest. Montana and Idaho propose to incorporate Tribal harvest into their assessment of the potential surplus of wolves available for public harvest in each State, each year,

to assure that the wolf population is maintained above recovery levels.

Utilization of those Tribal treaty rights will not significantly impact the wolf population or reduce it below recovery levels because a small portion of the wolf population could be affected by Tribal harvest or lives in areas subject to Tribal harvest rights.

The overall regulatory framework analyzed depends entirely on State-led management of wolves that are primarily on lands where resident wildlife is traditionally managed primarily by the States. Any wolves that may establish themselves on Tribal lands will be in addition to those managed by the States outside Tribal reservations. At this point in time, only the Nez Perce Tribe has a wolf management plan that was approved by the Service, but that plan only applied to listed wolves, and it was reviewed so that the Service could determine whether the Tribe could take a portion of the responsibility for wolf monitoring and management in Idaho under the 1994 special regulation under section 10(j) of the ESA. No other Tribe has submitted a wolf management plan. In November 2005, the Service requested information from all the Tribes in the NRM regarding their Tribal regulations and any other relevant information regarding Tribal management or concerns about wolves (Bangs November 17, 2004). All responses were reviewed, and Tribal comments were incorporated into this notice.

Summary—Montana and Idaho have proposed to regulate wolf mortality over conflicts with livestock after delisting in a manner similar to that used by the Service to reduce conflicts with private property, and that would assure that the wolf population would be maintained above recovery levels. These two State plans have committed to using a definition of a wolf pack that would approximate the Service's current breeding pair definition. Based on that definition, they have committed to maintaining at least 10 breeding pairs and 100 wolves per State by managing for a safety margin of 15 packs in each State. These States would control problem wolves in a manner similar to that currently used by the Service (1987, 1994, 1999; 70 FR 1285) and use adaptive management principles to regulate and balance wolf population size and distribution with livestock conflict and public tolerance. When wolf populations are above State management objectives for 15 packs, wolf control measures may be more liberal. When wolf populations are below 15 packs, wolf control as directed

by each State would be more conservative.

Private take of problem wolves under State regulations in Montana and Idaho would replace some agency control, but we believe this would not dramatically increase the overall numbers of problem wolves killed each year because of conflicts with livestock. Under Wyoming State law, the predatory animal status allows all wolves, including pups, to be killed by any means (except most poisons), anywhere in the predatory animal area, without limit, at any time, for any reason, and regardless of any direct or potential threat to livestock. Such unregulated take could eliminate wolves from some otherwise suitable habitat in northwestern Wyoming and reduce population levels to a point at which wolves in the NRM are, within the foreseeable future, likely to become in danger of extinction throughout a significant portion of their range.

In contrast to the Service recovery program, currently approved State and Tribal management programs are able to incorporate regulated public harvest. Only when wolf populations in Montana and Idaho are safely above recovery levels of 15 or more packs, will regulated harvest be utilized to help manage wolf distribution and numbers to minimize conflicts with humans. Wyoming State law and management also should meet this requirement. Each of the three core States routinely uses regulated public harvest to help successfully manage and conserve other large predators and wild ungulates under their authority, and should use similar programs to manage wolf populations safely above recovery levels when there are more than 15 packs in their State.

The States of Montana, Idaho, and Wyoming have managed resident ungulate populations for decades and maintain them at densities that would easily support a recovered wolf population. They, and Federal land management agencies, will continue to manage for high ungulate populations in the foreseeable future. There is no foreseeable condition that would cause a decline in ungulate populations significant enough to affect a recovered wolf population.

In accordance with the requirements of the ESA, the Service carefully reviewed Wyoming's July 2005 petition to delist; its defense of Wyoming's regulatory framework and the reasons why Wyoming believes we should consider Wyoming State law and its wolf plan as an adequate regulatory mechanism to propose delisting; a May 22, 2003, letter from the Wyoming

Office of the Attorney General regarding the relationship between the law and the plan; public comments; Wyoming's further defense of these issues in its April 6, 2006, comments on the Service's ANPR (71 FR 6634); and all other available information on this issue. At this time, we continue to determine that current State law and the State wolf plan in Wyoming do not provide adequate regulatory assurances that Wyoming's share of the NRM wolf population would be maintained into the foreseeable future and thus that the overall wolf population's distribution and numbers would be maintained above recovery levels. However, if Wyoming modified its State law and its wolf management plan to address the inadequacies described above and the Service approved them, we would then reevaluate whether to propose the delisting of wolves throughout the NRMs.

We are confident that liberal WGFD-regulated public hunting and trapping seasons alone could prevent wolf packs from forming throughout most of the unsuitable habitat in Wyoming, thus alleviating the State concerns expressed in the petition concerning excessive livestock damage, compensation for livestock damage, or conflicts with other wildlife management objectives. Because wolves occur at low density, are fairly visible, and travel in groups, entire packs are very susceptible to being killed by people. Legal authority under a trophy game status would allow WGFD to regulate human-caused mortality throughout unsuitable wolf habitat and provide a remedy for Service concerns about WGFD's authority to manage for wolf numbers and distribution above numerical and distributional recovery levels.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Public Attitudes Toward the Gray Wolf—The primary determinant of the long-term status of gray wolf populations in the United States will be human attitudes toward this large predator. These attitudes are largely based on the conflicts between human activities and wolves, concern with the perceived danger the species may pose to humans, its symbolic representation of wilderness, the economic effect of livestock losses, the emotions regarding the threat to pets, the conviction that the species should never be subject to sport hunting or trapping, and the wolf traditions of Native American tribes.

In recent decades, national support has been evident for wolf recovery and reintroduction in the NRM (Service 1999). With the continued help of

private conservation organizations, the States and tribes can continue to foster public support to maintain viable wolf populations in the NRMs. We believe that the State management regulations that will go into effect if wolves in the NRMs are removed from the ESA's protections will further enhance public support for wolf recovery. State management provides a larger and more effective local organization and a more familiar means for dealing with these conflicts (Bangs et al. 2004; Williams et al. 2002; Mech 1995). State wildlife organizations have specific departments and staff dedicated to providing accurate and science-based public education, information, and outreach. Each State plan has committed to provide balanced wolf outreach programs.

Genetics—Genetic diversity in the GYA segment of the NRMs is extremely high (Wayne et al. in prep.). A recent study of wolf genetics among wolves in northwestern Montana and the reintroduced populations found that wolves in those areas were as genetically diverse as their source populations in Canada and that inadequate genetic diversity was not a wolf conservation issue in the NRM at this time (Forbes and Boyd 1997; B. Vonholdt et al., UCLA, pers. comm.). Because of the long dispersal distances and the relative speed of natural wolf movement between Montana, Idaho, and Wyoming (discussed under Factor A), we anticipate that NRM wolves will continue to maintain high genetic diversity. However, should it become necessary sometime in the distant future, all of the three State plans recognize relocation as a potentially valid wildlife management tool.

In conclusion, we reviewed other manmade and natural factors that might threaten wolf population recovery in the foreseeable future. Public attitudes towards wolves have improved greatly over the past 30 years, and we expect that, given adequate continued management of conflicts, those attitudes will continue to support wolf restoration. The State wildlife agencies have professional education, information, and outreach components and are to present balanced science-based information to the public that will continue to foster general public support for wolf restoration and the necessity of conflict resolution to maintain public tolerance of wolves. Additionally, there are no concerns related to wolf genetic viability or interbreeding coefficients that would suggest inadequate connectivity among the recovery areas that could affect wolf population viability in the foreseeable

future. If significant genetic concerns do arise at some point in the future, our experience with wolf relocation shows that the States could effectively remedy those concerns with occasional wolf relocation (Bradley et al. 2005) actions, but it is highly unlikely such management action would ever be required.

Finding

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species. We reviewed the petition, available published and unpublished scientific and commercial information, and information submitted to us during the public comment period following our 90-day petition finding. This finding reflects and incorporates information we received during the public comment period and responds to significant issues. We also consulted with recognized gray wolf experts and State, Federal and tribal resource agencies. Based on this review, we find that (1) there is a NRM population of gray wolves that is both discrete from other wolf populations and significant to the taxon, (2) delisting of that NRM population is not warranted due to the lack of effective regulatory mechanisms in Wyoming, and (3) the NRM population of gray wolves should remain listed under the ESA and should not be proposed for delisting at this time.

In making this determination we have followed the procedures set forth in section 4(a)(1) of the ESA and regulations implementing the listing provisions of the ESA (50 CFR part 424). As required by the ESA, we considered the five potential threat factors to assess whether the NRM population of wolves are threatened or endangered throughout all or a significant portion of their range and, therefore, whether the NRM wolf population should remain listed. In regard to the NRM wolf population, the significant portions of the gray wolf's range are those areas that are important or necessary for maintaining a viable, self-sustaining, and evolving representative metapopulation in order for the NRM wolf population to persist into the foreseeable future. We have determined that an essential part of achieving recovery in all significant portions of the range is a well-distributed number of wolf packs and individual wolves among the three States and the three recovery zones.

The large amount and distribution of suitable habitat in public ownership and the presence of three large protected

core areas that contain highly suitable habitats assures the Service that threats to the NRM wolf population's habitat have been reduced or eliminated in all significant portions of its range for the foreseeable future. Unsuitable habitat and small, fragmented suitable habitat away from these core areas within the NRMs, largely represent geographic locations where wolf packs cannot persist and are not significant to the species. Disease, which would be carefully monitored by the States, and natural predation do not threaten wolf population recovery in any significant portion of the species' range, nor are they likely to within the foreseeable future. Additionally, we believe that other relevant natural or manmade factors (i.e., public attitudes and genetics) are not significant conservation issues that threaten the wolf population in any significant portion of its range within the foreseeable future.

Managing human-caused mortality remains the primary challenge to maintaining a recovered wolf population in the foreseeable future. We have determined that both the Montana and Idaho wolf management plans are adequate to regulate human-caused mortality and that Montana and Idaho would maintain their share and distribution of the tri-State wolf population above recovery levels if the NRM wolf DPS were delisted.

At this time, however, we continue to determine that current State law and the State wolf plan in Wyoming do not provide adequate regulatory assurances that Wyoming's share of the NRM wolf population, and thus the overall NRM wolf population, would not become in danger of extinction throughout a significant portion of its range within the foreseeable future. Therefore, we find that the petitioned action is not warranted.

References Cited

A complete list of all references cited in this document is available upon request from the Western Gray Wolf Recovery Coordinator (see **FOR FURTHER INFORMATION CONTACT**).

Author

The primary author of this document is the Western Gray Wolf Recovery Coordinator, Montana Ecological Services Office (see **ADDRESSES**).

Authority

The authority for this action is the ESA of 1973, as amended (16 U.S.C. 1531 et seq.).

Dated: July 18, 2006.

H. Dale Hall,

Director, Fish and Wildlife Service.

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