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Part III

Department of the Interior

Fish and Wildlife Service

50 CFR Part 17

Endangered and Threatened Wildlife and Plants—Gray Wolf; Proposed Rule

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018–AU53

Endangered and Threatened Wildlife and Plants; Designating the Northern Rocky Mountain Population of Gray Wolf as a Distinct Population Segment; Removing the Northern Rocky Mountain Distinct Population Segment of Gray Wolf From the Federal List of Endangered and Threatened Wildlife

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Advanced notice of proposed rulemaking.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), announce our intention to conduct rulemaking to establish a distinct population segment (DPS) of the gray wolf (*Canis lupus*) in the Northern Rocky Mountains of the United States (NRM). The NRM DPS of gray wolf encompasses the eastern one-third of Washington and Oregon, a small part of north-central Utah, and all of Montana, Idaho, and Wyoming. The threats to the wolf population in the NRM DPS have been reduced or eliminated as evidenced by the population exceeding the numerical, distributional, and temporal recovery goals each year since 2002. The States of Montana and Idaho have adopted State laws and State wolf management plans that would conserve a recovered NRM wolf population within their boundaries into the foreseeable future. However, we have determined that Wyoming State law and its wolf management plan do not provide the necessary regulatory mechanism to assure that Wyoming's share of a recovered NRM wolf population will be conserved if the ESA's protections were removed. Therefore, we intend to conduct a future rulemaking to propose that the gray wolf in the NRM wolf DPS be removed from the List of Threatened and Endangered Wildlife under the Endangered Species Act of 1973 (ESA), as amended, if Wyoming adopts a State law and a State wolf management plan that is approved by the Service. Concerns regarding the Wyoming plan would have to be resolved before a NRM DPS delisting could be finalized. This ANPRM is being issued in advance of completion of the 12 month status review of NRM wolves. This status review remains in progress.

DATES: We request that comments on this notice be submitted by the close of business on April 10, 2006.

ADDRESSES: If you wish to comment, you may submit comments and materials concerning this notice, identified by ''RIN number 1018–AU53,'' by any of the following methods:

1. Federal e-Rulemaking Portal—*http://www.regulations.gov*. Follow the instructions for submitting comments.
2. E-mail—*NRMGrayWolf@fws.gov*. Include ''RIN number 1018–AU53'' in the subject line of the message.
3. Mail—U.S. Fish and Wildlife Service, Western Gray Wolf Recovery Coordinator, 585 Shepard Way, Helena, Montana 59601.
4. Hand Delivery/Courier—U.S. Fish and Wildlife Service, Western Gray Wolf Recovery Coordinator, 585 Shepard Way, Helena, Montana 59601.

FOR FURTHER INFORMATION CONTACT: Edward E. Bangs, Western Gray Wolf Recovery Coordinator, U.S. Fish and Wildlife Service, at our Helena office (see **ADDRESSES**) or telephone (406) 449–5225, extension 204.

SUPPLEMENTARY INFORMATION:

Background

Gray wolves (*Canis lupus*) are the largest wild members of the dog family (Canidae). Adult gray wolves range from 40–175 pounds (lb) (18–80 kilograms [kg]) depending upon sex and region (Mech 1974). In the NRM, adult male gray wolves average over 100 lb (45 kg), but may weigh up to 130 lb (60 kg). Females weigh slightly less than males. Wolves' fur color is frequently a grizzled gray, but it can vary from pure white to coal black (Gipson *et al.* 2003). Wolves may appear similar to coyotes (*C. latrans*) and some domestic dog breeds (such as the German shepherd or Siberian husky) (*C. familiaris*). However, the gray wolf's size, long legs, narrow chest, large feet, wide head and snout, and straight tail distinguish it from both the coyote and dog.

Gray wolves have a circumpolar range including North America, Europe and Asia. The only areas within North America that lacked gray wolf populations prior to European settlement were southern and interior Greenland, the coastal regions of Mexico, Central America, coastal and other large parts of California, the extremely arid deserts and mountaintops of the western United States, parts of eastern and southeastern United States, and possibly southeastern Canada (Young and Goldman 1944; Hall 1981; Mech 1970; Nowak 1995, 2003; Wilson *et al.* 2000, 2003; Grewal *et al.* 2004). Some authorities question the reported historical absence of gray wolves from large parts of California (Carbyn in litt. 2000; Mech in litt. 2000; Schmidt 1987, 1991).

Wolves primarily prey on medium and large mammals. Wild prey species in the NRM include white-tailed deer (*Odocoileus virginianus*), mule deer (*O. hemionus*), moose (*Alces alces*), elk (*Cervus canadensis*), pronghorn antelope (*Antilocapra americana*), bison (*Bison bison*), bighorn sheep (*Ovis canadensis*), mountain goat (*Oreamnos americanus*), woodland caribou (*Rangifer caribou*), and beaver (*Castor canadensis*). While other small and mid-sized mammals, birds, large invertebrates, fish, and fruits are occasionally eaten, they are rarely important in the wolf's diet (Mech and Boitani 2003). Since 1987, wolves in the NRM also have preyed on domestic animals, including cattle (*Bos sp.*), sheep (*Ovis sp.*), llamas (*Lama glama*), horses (*Equus sp.*), goats (*Capra sp.*), and dogs (Service *et al.* 2005).

Wolves have a social structure, normally living in packs of 2 to 12 animals. Wolf packs are usually family groups consisting of a breeding pair, their pups from the current year, offspring from previous years, and an occasional unrelated wolf. Wolf pack structure can be ''complex'' (multiple generations) or ''simple'' (breeding pair and pups). In the NRM, pack sizes average about 10 wolves in protected areas, but a few complex packs have been substantially bigger in some areas of Yellowstone National Park (YNP) (D. Smith, Yellowstone NPS, pers. comm., 2005; Service *et al.* 2005). In areas where conflicts with humans and livestock are most prevalent, packs are typically smaller and are more likely to be ''simple.'' Packs typically occupy large distinct territories (200–500 square miles (mi^2) (518–1,295 square kilometers (km^2) and defend these areas from other wolves or packs. Once a given area is occupied by resident wolf packs, it becomes saturated and wolf numbers become regulated by the amount of available prey, intraspecies conflict, other forms of mortality, and dispersal.

Both male and female yearling wolves often disperse from their packs, although some non-breeding wolves remain with their natal packs for years. Dispersing wolves may cover large areas as lone animals as they try to join other packs or attempt to form their own pack in unoccupied habitat. Dispersal distances in the NRM average about 60 miles (mi) (97 kilometers (km)), but dispersals over 500 mi (805 km) have been documented (Boyd *et al.* in prep.; Boyd and Pletscher 1997).

Typically, only the top-ranking (''alpha'') male and female in each pack

breed and produce pups (Packard 2003; Smith, pers. comm., 2005; Service *et al.* 2005). Females and males typically begin breeding as 2-year olds and may annually produce young until they are over 10 years old. Litters are typically born in April and range from 1 to 11 pups, but average around 5 pups (Service 1992a; Service *et al.* 2001). Most years, 4 of these 5 pups survive until winter (Service *et al.* 2005). Wolves can live 13 years but the average lifespan in the NRM is about 4 years (Smith, pers. comm., 2005). Pups are raised by the entire pack. If alphas are lost when pups are very young, other pack members or even a single adult can successfully raise them (Boyd and Jimenez 1994; Brainerd *et al.* in prep.). Pup production and survival can increase when wolf density is lower and food availability per wolf increases (Fuller *et al.* 2003). Breeding members also can be quickly replaced either from within or outside the pack (Packard 2003; Brainerd *et al.* in prep.). Consequently, wolf populations can rapidly recover from severe disruptions, such as very high levels of human-caused mortality or disease. After severe declines, wolf populations can more than double in just 2 years if mortality is reduced; increases of nearly 100 percent per year have been documented in low-density suitable habitat (Fuller *et al.* 2003; Smith, pers. comm., 2005; Service *et al.* 2005).

Recovery

Background—As Europeans began settling the United States, they poisoned, trapped, and shot wolves, causing this once widespread species to be eradicated from most of its range in the 48 conterminous States (Mech 1970; McIntyre 1995). Gray wolf populations were eliminated from Montana, Idaho, and Wyoming, as well as adjacent southwestern Canada by the 1930s (Young and Goldman 1944). Thereafter, only isolated observations of individuals and non-breeding pairs were reported in the area (Ream and Mattson 1982; Weaver 1978). After human-caused mortality of wolves in southwestern Canada was regulated in the 1960s, populations expanded southward (Carbyn 1983, Pletscher *et al.* 1991). Dispersing individuals occasionally reached the NRM (Ream and Mattson 1982; Nowak 1983), but lacked legal protection there until 1974 when they were listed as endangered under the ESA (39 FR 1171, January 4, 1974).

Recovery Planning and the Selection of Recovery Criteria—Shortly after listing we formed the interagency wolf recovery team to complete a recovery plan for the NRM population (Service 1980; Fritts *et al.* 1995). The NRM Wolf Recovery Plan (Rocky Mountain Plan) was approved in 1980 (Service 1980) and revised in 1987 (Service 1987). It specifies a recovery criterion of 10 breeding pairs of wolves (defined in 1987 as two wolves of opposite sex and adequate age, capable of producing offspring) for 3 consecutive years in each of 3 distinct recovery areas—(1) northwestern Montana (Glacier National Park; the Great Bear, Bob Marshall, and Lincoln Scapegoat Wilderness Areas; and adjacent public lands), (2) central Idaho (Selway-Bitterroot, Gospel Hump, Frank Church River of No Return, and Sawtooth Wilderness Areas; and adjacent, mostly Federal, lands), and (3) the Yellowstone National Park (YNP) area (including the Absaroka-Beartooth, North Absaroka, Washakie, and Teton Wilderness Areas; and adjacent public lands). The Rocky Mountain Plan states that if 2 recovery areas maintain 10 breeding pairs for 3 successive years, gray wolves in the NRM can be reclassified to threatened status. It also states that if all 3 recovery areas maintain 10 breeding pairs for 3 successive years, the NRM wolf population can be considered fully recovered and can be considered for delisting.

The 1994 environmental impact statement (EIS) reviewed wolf recovery in the NRM and the adequacy of the recovery goals (Service 1994). The EIS indicated that the 1987 recovery goal was, at best, a minimal recovery goal, and that modifications were warranted on the basis of more recent information about wolf distribution, connectivity, and numbers. This review concluded that as a minimum the recovery goal should be, ''Thirty or more breeding pairs (*i.e.*, 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) comprising some +300 wolves in a metapopulation (a population that exists as partially isolated sets of subpopulations) (Service 1994) with genetic exchange between subpopulations should have a high probability of long-term persistence.''

We conducted another review of what constitutes a recovered wolf population in late 2001 and early 2002 (Bangs 2002). Relevant literature was reviewed (Fritts *et al.* 1994; Fritts and Carbyn 1995), and responses were received and evaluated from 50 of 88 experts contacted. This review showed that there is a wide variety of professional opinion about wolf population viability. Based on the review, we adopted the 1994 EIS's more relevant and stringent definition of wolf population viability and recovery (Service 1994) and began using entire States, in addition to recovery areas, to measure progress towards recovery goals (Service *et al.* 2002). We have determined that an essential part of achieving recovery is a well distributed number of wolf packs and individual wolves among the three States and the three recovery zones. While absolute equitable distribution is not necessary, a well distributed population with no one State maintaining a disproportionately low number of packs or number of individual wolves is needed.

Fostering Recovery—In 1982, a wolf pack from Canada began to occupy Glacier National Park along the United States Canada border. In 1986, the first litter of pups documented in over 50 years was born in the Park (Ream *et al.* 1989). Also in 1986, a pack denned just east of the Park on the Blackfeet Reservation, but was not detected until 1987, when they began to depredate livestock (Bangs *et al.* 1995). The number of wolves resulting from this ''natural'' recovery in northwestern Montana steadily increased for the next decade (Service *et al.* 2005).

In 1995 and 1996, we reintroduced wolves from southwestern Canada to remote public lands in central Idaho and YNP (Bangs and Fritts 1996; Fritts *et al.* 1997; Bangs *et al.* 1998). These wolves were classified as nonessential experimental populations under section 10(j) of the ESA to increase management flexibility and address local and State concerns (59 FR 60252 and 60266, November 22, 1994). This reintroduction and accompanying management programs greatly expanded the numbers and distribution of wolves in the NRM. Because of the reintroduction, wolves soon became established throughout central Idaho and the Greater Yellowstone Area (GYA) (Bangs *et al.* 1998; Service *et al.* 2005).

Monitoring and Managing Recovery—By 1989, we formed an interagency wolf working group (Working Group), composed of Federal, State, and tribal agency personnel (Bangs 1991; Fritts *et al.* 1995; Service 1989). The Working Group, whose membership has evolved as wolf range has expanded, conducted 4 basic recovery tasks, in addition to the standard enforcement functions associated with the take of a listed species. These tasks were—(1) monitor wolf distribution and numbers; (2) control wolves that attacked livestock by moving and other non-lethal measures or by killing them; (3) conduct research on wolf relationships to ungulate prey, other carnivores and scavengers, livestock, and people; and

(4) provide accurate science-based information to the public through reports and mass media so that people could develop their opinions about wolves and wolf management from an informed perspective (Service *et al.* 1989–2005).

The size and distribution of the wolf population is estimated by the Working Group each year and, along with other information, is published in interagency annual and weekly reports (Service *et al.* 1989–2005; Service 1998–2005). Since the early 1980s, the Service and our cooperating partners have radio-collared and monitored over 716 wolves in the NRM to assess population status, conduct research, and to reduce/resolve conflicts with livestock. The Work Group's annual population estimates represent the best scientific and commercial information available regarding year-end NRM gray wolf population size and trends, as well as distributional information.

At the end of 2000, the NRM population first met its numerical and distributional recovery goal of a minimum of 30 ''breeding pairs'' and over 300 wolves well-distributed among Montana, Idaho, and Wyoming (68 FR 15804, April 1, 2003; Service *et al.* 2003). That year, Montana attained 8 breeding pairs and approximately 97 wolves; Wyoming attained 12 breeding pairs and approximately 153 wolves; and Idaho attained 10 breeding pairs and 187 wolves. This minimum recovery goal was attainted or exceeded in 2001, 2002, 2003 and 2004. In 2001, Montana attained 7 breeding pairs and approximately 123 wolves; Wyoming attained 13 breeding pairs and approximately 189 wolves; and Idaho attained 14 breeding pairs and 251 wolves. In 2002, Montana attained 17 breeding pairs and approximately 183 wolves; Wyoming attained 18 breeding pairs and approximately 217 wolves; and Idaho attained 14 breeding pairs and 216 wolves. In 2003, Montana attained 10 breeding pairs and approximately 182 wolves; Wyoming attained 16 breeding pairs and approximately 234 wolves; and Idaho attained 25 breeding pairs and 345 wolves. In 2004, Montana attained 15 breeding pairs and approximately 153 wolves; Wyoming attained 24 breeding pairs and approximately 260 wolves; and Idaho attained 27 breeding pairs and 422 wolves. Figure 1 illustrates wolf population trends by State from 1979 to 2004. Official population estimates for 2005 are not yet available.

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.

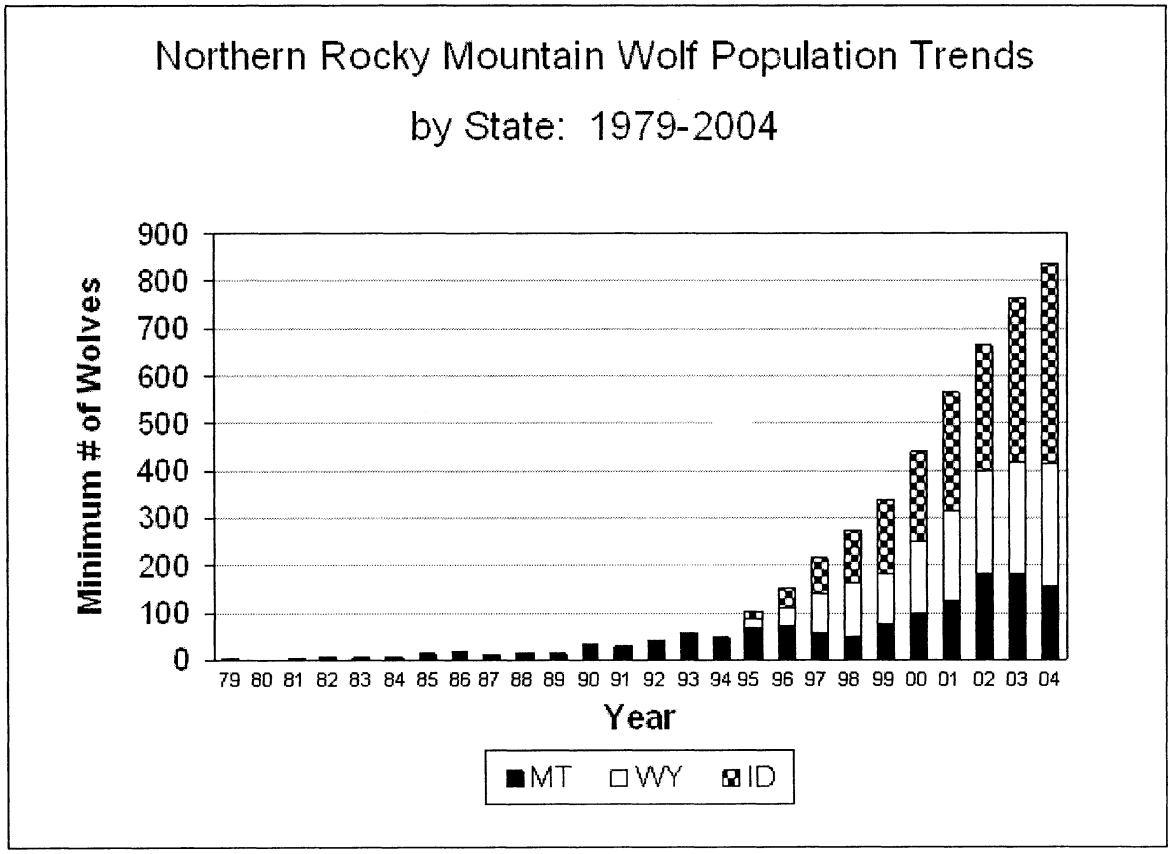

Figure 1: Northern Rocky Mountain wolf population estimates by State, as calculated and reported in the interagency annual wolf status reports (Service et al. 1989-2005).

Recovery in the Northwestern Montana Recovery Area—Reproduction first occurred in northwestern Montana in 1986. The natural ability of wolves to find and quickly recolonize empty habitat 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 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 49–108 wolves (Service *et al.* 2005). Our

1998 estimate was a minimum of 49 wolves in 5 breeding pairs. In 1999, and again in 2000, 6 breeding pairs produced pups, and the northwestern Montana population increased to about 63 wolves. In 2001, we estimated that 84 wolves in 7 breeding pairs occurred; in 2002, there were an estimated 108 wolves in 12 breeding pairs; in 2003, there were an estimated 92 wolves in 4 breeding pairs; and in 2004, there were an estimated 59 wolves in 6 breeding pairs (Service *et al.* 2002, 2003, 2004, 2005). (See Figure 1.)

The likely reasons for the lack of further growth are that suitable wolf habitat in northwestern Montana is limited and wolf packs there are at a 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 its' thick forests. Wolves in northwestern Montana prey mainly on white-tailed deer and pack size is smaller, which also makes packs more difficult to detect (Bangs *et al.* 1998). 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 86 wolves and about 7 packs.

Northwestern Montana wolves are demographically and genetically linked to both the wolf population in Canada and to central Idaho (Pletscher *et al.* 1991; Boyd and Pletscher 1997). 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 over-wintering 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. 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—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.* in press). In 1998, the central Idaho wolf population consisted of a minimum of 114 wolves, including 10 breeding pairs (Bangs *et al.* 1998). By 1999, it had grown to about 141 wolves in 10 breeding pairs. By 2000, this population had 192 wolves in 10 breeding pairs and by 2001 it had climbed to about 261 wolves in 14 breeding pairs (Service *et al.* 2002). In 2002, there were 284 wolves in 14 breeding pairs; in 2003, there were 368 wolves in 26 breeding pairs; and by the end of 2004, there were 452 wolves in 30 breeding pairs (Service *et al.* 2003, 2004, 2005) (Figure 1).

Recovery in the Greater Yellowstone Area—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 1997). Two of the 3 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 five-month old pups removed from northwestern Montana, were released in YNP in the spring of 1997.

By 1998, the wolves had expanded from YNP to the GYA and the population consisted of 112 wolves, including 6 breeding pairs that produced 10 litters of pups. The 1999 population consisted of 118 wolves, including 8 breeding pairs. In 2000, the GYA had 177 wolves, including 14 breeding pairs, and there were 218 wolves, including 13 breeding pairs, in 2001 (Service *et al.* 2002). In 2002, there were an estimated 271 wolves in 23 breeding pairs; in 2003, there were an estimated 301 wolves in 21 breeding pairs; and in 2004, there were an estimated 324 wolves in 30 breeding pairs (Service *et al.* 2003, 2004, 2005) (Figure 1).

Preliminary estimates suggest that wolf numbers in GYA are down in 2005 (221 wolves in 13 breeding pairs) (Service September 9, 2005). The decline of wolves in YNP occurred because (1) highly suitable habitat is saturated with wolf packs; (2) conflict among packs appears to be limiting population density; (3) there are fewer elk than when reintroduction took place (White and Garrott 2006; Vucetich *et al.* 2005); and, (4) a suspected, but as yet unconfirmed, outbreak of canine parvovirus (CPV) or canine distemper, reduced pup survival in 2005. Additional significant growth in the YNP portion of the Wyoming wolf population is unlikely because suitable wolf habitat is saturated with resident wolf packs. Wolf recovery in the GYA segment of the NRM wolf DPS will likely depend on wolf packs living outside YNP in Wyoming.

In conclusion, having attained or exceeded the minimum numerical and distributional recovery goals for five consecutive years, the NRM wolf population has now achieved the biological criteria necessary for a viable and recovered wolf population.

Previous Federal Action

In 1974, four subspecies of gray wolf were listed as endangered including the 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. monstrabilis*) of Texas and Mexico (39 FR 1171, January 4, 1974). In 1978, we published a rule (43 FR 9607, March 9, 1978) relisting 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. At that time, critical habitat was designated in Minnesota and Isle Royale, Michigan.

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. The Yellowstone Experimental Population Area consists of that portion of Idaho east of Interstate 15; that portion of Montana that is east of Interstate 15 and south of the Missouri River from Great Falls, Montana, to the eastern Montana border; and all of Wyoming (59 FR 60252, November 22, 1994). The Central Idaho Experimental Population Area consists of that portion of Idaho that is south of Interstate 90 and west of Interstate 15; and that portion of Montana south of Interstate 90, west of Interstate 15 and south of Highway 12 west of Missoula (59 FR 60266, November 22, 1994). This designation assisted us in initiating gray wolf reintroduction projects in central Idaho and the GYA (59 FR 60252, November 22, 1994). On January 6, 2005, we revised the regulations under

section 10(j) and liberalized management options for problem wolves (70 FR 1285). We also encouraged State and Tribal leadership in wolf management in the nonessential experimental population areas (70 FR 1286, January 6, 2005) where States and Tribes had Service-approved wolf management plans.

On July 13, 2000, we proposed to reclassify and delist the gray wolf in various parts of the contiguous United States (65 FR 43449). On April 1, 2003, we published a final rule revising the listing status of the gray wolf across most of the conterminous United States from endangered to threatened (68 FR 15804). In terms of the NRM population, this rule (1) designated Washington, Oregon, California, Nevada, Montana, Idaho, Wyoming and the northern portions of Utah and Colorado as the Western gray wolf DPS (covering a larger area than proposed in 2000); (2) reclassified this DPS to threatened status, except in the experimental population areas; and (3) implemented a special regulation under section 4(d) of the ESA to allow increased management flexibility for problem wolves. On January 31, 2005, and August 19, 2005, the U.S. District Courts in Oregon and Vermont, respectively, concluded that the 2003 final rule was ''arbitrary and capricious'' and violated the ESA (*Defenders of Wildlife* v. *Norton*, 03–1348–JO, D. OR 2005; *National Wildlife Federation* v. *Norton*, 1:03–CV–340, D. VT. 2005). The courts' rulings invalidated the April 2003 changes to the ESA listing for the gray wolf. Therefore, the gray wolf in the Rocky Mountains, outside of areas designated as nonessential experimental populations, reverted back to the endangered status that existed prior to the 2003 reclassification.

The Service has received a number of petitions relevant to the NRM wolf population. On July 16, 1990, the Service received a petition from the Farm Bureau Federations of Wyoming, Montana, and Idaho to delist the gray wolf. On November 30, 1990, the Service published a finding that the petition did not present substantial information to indicate that the petitioned action may be warranted (55 FR 49656).

Subsequent to our July 13, 2000, reclassification proposal (65 FR 43449), but after the close of the comment period, we received petitions from Defenders of Wildlife to list, as endangered, gray wolf DPSs in the—(1) southern Rocky Mountains, (2) northern California-southern Oregon, and (3) western Washington. Because wolves were already protected as endangered throughout the 48 conterminous States, we did not need to take action on these petitions.

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 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 (*Canis lupus*) by establishing the northern Rocky Mountain DPS and to concurrently remove the gray wolf in the NRM DPS from the Federal list of threatened and endangered species (Dave Freudenthal, Office of the Governor, State of Wyoming, in litt. 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 a 12-month status review, which continues.

In June of 2003, the Nevada Department of Wildlife (NDOW) submitted a petition to delist wolves in Nevada. The NDOW petition asserted that the 1978 listing of gray wolves as endangered in Nevada and the 2003 reclassification of gray wolves as threatened in Nevada were in error. On December 9, 2005, we published a finding that the NDOW petition did not provide substantial information that the petitioned action may be warranted (70 FR 73190).

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'' (68 FR 15804).

Distinct Vertebrate Population Segment Policy Overview

Pursuant to 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. To interpret and implement the DPS provision of the ESA and Congressional guidance, the Service and the National Marine Fisheries Service (NMFS) published, on December 21, 1994, a draft Policy Regarding the Recognition of Distinct Vertebrate Population Segments under the ESA and invited public comments on it (59 FR 65884). After review of comments and further consideration, the Service and NMFS adopted the interagency policy as issued in draft form, 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 list of endangered and threatened species, reclassification of already listed species, and removals from the list. 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., Canis lupus*)—bear on whether the population segment is a valid DPS. If a population meets both tests, it is a DPS and then the third factor is applied—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).

Analysis for Discreteness

Under our Policy Regarding the Recognition of Distinct Vertebrate Population Segments, a population segment of a vertebrate taxon may be considered discrete if it satisfies either one of the following conditions—(1) 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) 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.

Markedly Separated From Other Populations of the Taxon—The eastern edge of the tentative NRM wolf DPS (See Figure 2) is about 400 mi (644 km) from the western edge of the area currently occupied by the Great Lakes wolf population (eastern Minnesota) and is separated from it by hundreds of miles of unsuitable habitat (See discussion of suitable habitat in Factor A). The southern edge of the NRM wolf DPS border is about 450 mi (724 km) from the nonessential experimental populations of wolves in the southwestern United States with vast amounts of unoccupied marginal or unsuitable habitat separating them. No wolves are known to occur west of the contemplated DPS. No wolves from other populations are known to have dispersed as far as the borders of the NRM wolf DPS.

Although dispersal distance data for North America (Fritts 1983; Missouri Department of Conservation 2001; Ream *et al.* 1991; Boyd and Pletscher 1997; Boyd *et al.* in prep.) show that gray wolves can disperse over 500 mi (805 km) from existing wolf populations, the average dispersal of NRM wolves is about 60 mi (97 km). Only 7 of nearly 200 known NRM wolf dispersal events from 1994 through 2004 have been over 180 mi (290 km) (Boyd *et al.* in prep.). Six of these seven U.S. long-distance dispersers remained within the tentative DPS. None of those long-distance wolves found mates nor survived long enough to breed in the United States (Boyd in prep.). Of the three wolves that dispersed into eastern Oregon, two died and one was relocated by the Service back to central Idaho. Of the two wolves that dispersed into eastern Washington, one died and the other moved north into Canada. The wolf that dispersed to northern Utah was incidentally captured by a coyote trapper and relocated back to Wyoming by the Service.

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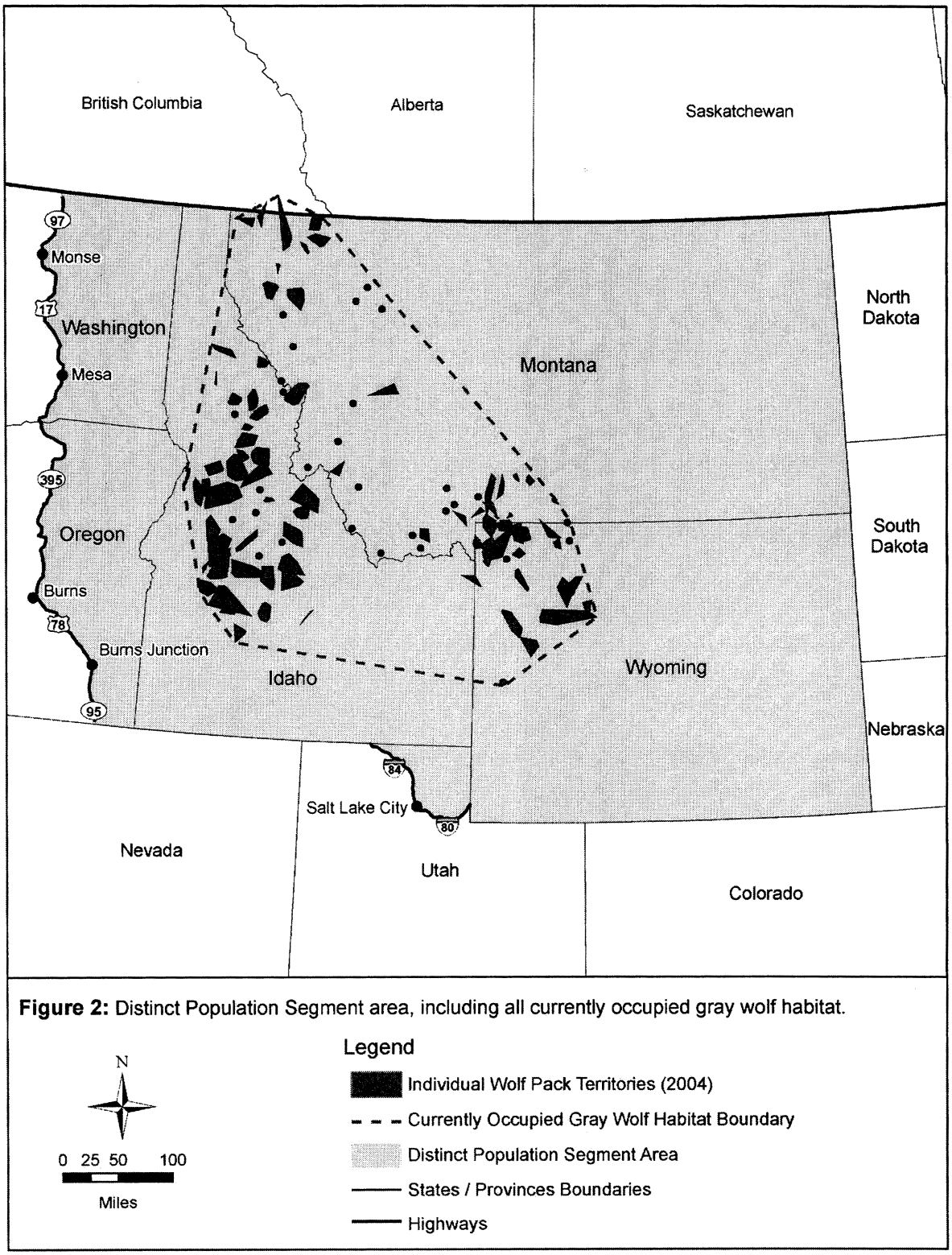

Figure 2: Distinct Population Segment area, including all currently occupied gray wolf habitat.

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The only wolf known to have dispersed (within the United States) beyond the border of the tentative NRM wolf DPS was killed by a vehicle collision along Interstate 70 in north-central Colorado.

No connectivity currently exists between the three U.S. gray wolf populations, nor are there any resident wolf packs in intervening areas. While it is theoretically possible that a lone wolf might transverse over 400 mi from one population to the other, it has never been documented and is extremely unlikely. Furthermore, the DPS Policy does not require complete separation of one DPS from other populations, but instead requires ''marked separation.''

Management Differences Among the United States and Canadian Wolf Populations—The DPS Policy allows us to use international borders to delineate

the boundaries of a DPS even if the current distribution of the species extends across that border. Therefore, we will continue to use the United States-Canada border to mark the northern boundary of the DPS due to the difference in control of exploitation, conservation status, and regulatory mechanisms between the two countries. About 52,000–60,000 wolves occur in Canada where suitable habitat is abundant (Boitani 2003). Because of this abundance, protection and intensive management are not necessary to conserve the wolf in Canada. This contrasts with the situation in the United States, where, to date, intensive management has been necessary to recover the wolf. Wolves in Canada are not protected by Federal laws and are only minimally protected in most Canadian provinces (Pletscher *et al.* 1991). If delisted, States in the NRM would carefully monitor and manage to retain populations at or above the recovery goal (see Factor D below). Significant differences exist in management between U.S.-Canadian wolf populations.

Analysis for Significance

If we determine a population segment is discrete, we next consider available scientific evidence of its significance to the taxon (*i.e., Canis 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. Below we address Factors 1 and 2. Factors 3 and 4 do not apply to the tentative NRM wolf DPS and thus are not included in our analysis for significance.

Unusual or Unique Ecological Setting—Within the range of holarctic wolves, the NRM is the only area where such a high diversity of large predators occupy the same areas as a large variety of native ungulate prey species, resulting in complex ecological interaction between the ungulate prey, predator, and scavenger groups (Smith *et al.* 2003). In the NRM wolf DPS, gray wolves share habitats with black bears (*Ursus americanus*), grizzly bears (*Ursus arctos horribilis*), cougars (*Felis concolor*), lynx (*Lynx canadensis*), wolverine (*Gulo gulo*), coyotes, badgers (*Taxidea taxus*), bobcats (*Felis rufus*), fisher (*Martes pennanti*), and marten (*Martes americana*). The unique and diverse assemblage of native prey include elk, mule deer, white-tailed deer, moose, bighorn sheep, mountain goats, pronghorn antelope, bison, and beaver. This complexity leads to unique ecological cascades in some areas, such as in YNP (Smith *et al.* 2003; Robbins 2004; Bangs and Smith in press). For example, wolves appear to be changing elk behavior and elk relationships and competition with other ungulates and other predators (*e.g.* cougars) that did not occur when wolves were absent. These complex interactions could be increasing streamside willow production and survival (Ripple and Beschta 2004), which in turn can affect beaver and nesting by riparian birds (Nievelt 2001). This suspected pattern of wolf-caused changes also may be occurring with scavengers, whereby wolf predation is providing a year-round source of food for a diverse variety of carrion feeders (Wilmers *et al.* 2003). The wolf population in the NRM has significantly extended the range of the gray wolf in the continental United States into a much more diverse, ecologically complex, and unique assemblage of species than is found elsewhere within historical wolf habitat in the northern hemisphere, including Europe and Asia.

Significant Gap in the Range of the Taxon—Loss of the NRM wolf population would represent a significant gap in the holarctic range of the taxon. As noted above, wolves once lived throughout most of North America. Wolves have been extirpated from most of the southern portions of their North American range. The loss of the NRM wolf population would represent a significant gap in the species' holarctic range in that this loss would create a 15 degree latitudinal or over 1,000 mi (1,600 km) gap across the Rocky Mountains between the Mexican wolf and wolves in Canada. If this potential gap were realized, substantial cascading ecological impacts would occur in that area (Smith *et al.* 2003; Robbins 2004; Bangs and Smith in press).

Given the wolf's historic occupancy of the conterminous States and the portion of the historic range the conterminous States represent, recovery in the lower 48 States has long been viewed as important to the taxon (*C. lupus*) (39 FR 1171, January 4, 1974; 43 FR 9607, March 9, 1978). The tentative NRM wolf DPS is significant in achieving this objective, as it is 1 of only 3 known occupied areas in the lower 48 States and constitutes nearly 20 percent of the remaining wolves in the conterminous States.

We believe, based on our analysis of the best available scientific information, that the NRM wolf DPS is significant to the taxon in that NRM wolves exist in a unique ecological setting and their loss would represent a significant gap in the range of the taxon. Therefore, the NRM wolf DPS appears to meet the criterion of significance under our Policy Regarding the Recognition of Distinct Vertebrate Population Segments.

Defining the Boundaries of the Tentative NRM Wolf DPS

Although our DPS policy does not provide for State or other intra-national governmental boundaries to be used in determining the discreteness of a potential DPS, an artificial or manmade boundary may be used as a boundary of convenience in order to clearly identify the geographic area included within a DPS designation. Easily identifiable manmade features, such as roads and highways, also can serve as a boundary of convenience for delineating a DPS. The boundaries of the tentative NRM wolf DPS include all of Montana, Idaho, and Wyoming, the eastern third of Washington and Oregon, and a small part of north central Utah (See Figure 2). Specifically, the DPS includes that portion of Washington east of Highway 97 and Highway 17 north of Mesa and that portion of Washington east of Highway 395 south of Mesa. It includes that portion of Oregon east of Highway 395 and Highway 78 north of Burns Junction and that portion of Oregon east of Highway 95 south of Burns Junction. Finally, the DPS includes that portion of Utah east of Highway 84 and north of Highway 80. The centerline of these roads will be deemed the border of the DPS.

One factor considered in defining the boundaries of the NRM wolf DPS was the documented current distribution of all known wolf pack locations in 2004 (Figure 2) (Service *et al.* 2005). We also viewed the annual distribution of wolf packs back to 2002 (the first year the population exceeded the recovery goal) (Service *et al.* 2002, 2003, 2004). Our estimate of the overall area occupied by wolf packs in the NRM would not have substantially changed our conclusions had we included other years of data, so we used the most current information available. All known wolf packs in recent history have only been located in Montana, Idaho, and Wyoming. Only

occasional lone dispersing wolves from the NRM population have been documented beyond those three States, in eastern Washington, eastern Oregon, northern Utah, and central Colorado (Boyd *et al.* in prep.).

Dispersal distances played a key role in determining how far to extend the DPS. We examined the known dispersal distance of over 200 marked dispersing wolves from the NRM, primarily using radio-telemetry locations and recoveries of the carcasses of marked wolves from the 1980s until the present time (Boyd and Pletscher 1997; Boyd *et al.* in prep). These data indicate the average dispersal distance of wolves from the NRM for the last 10 years was about 60 mi (97 km) (Boyd *et al.* in prep.). We determined that 180 mi (290 km), three times the average dispersal distance, was a break-point for unusually long-distance dispersal out from existing wolf pack territories, in part, because only 7 wolves (none of which subsequently bred) have dispersed farther into the United States. Only dispersal within the United States was considered in these calculations because we were trying to determine the appropriate DPS boundaries within the United States. Dispersers to Canada were irrelevant because the Canadian border formed the northern edge of the DPS. Thus, we plotted the average dispersal distance and three times the average dispersal distance out from existing wolf pack territories. The resulting map indicated a wide-band of likely wolf dispersal that might be frequent enough to result in additional pack establishment from the core wolf population given the availability of nearby suitable habitat. Our specific data on wolf dispersal in the NRM may not be applicable to other areas of North America (Mech and Boitani 2003).

We also examined suitable wolf habitat in Montana, Idaho, and Wyoming (Oakleaf *et al.* in press) and throughout the western United States (Carroll *et al.* 2003, 2006) by comparing the biological and physical characteristics of areas currently occupied by wolf packs with the characteristics of adjacent areas that remain unoccupied by wolf packs. The basic findings and predictions of those models (Oakleaf *et al.* in press; Carroll *et al.* 2003, 2006) were similar in many respects. Suitable wolf habitat in the NRM wolf DPS is typically characterized by public land, mountainous forested habitat, abundant year-round wild ungulate populations, lower road density, lower numbers of domestic livestock that were only present seasonally, few domestic sheep, low agricultural use, and low human populations (See Factor A). The models indicate there is a large block of suitable wolf habitat in central Idaho and the GYA, and to a lesser extent northwestern Montana. These findings support the recommendations of the 1987 wolf recovery plan (Service 1987) that identified those three areas as the most likely locations to support a recovered wolf population. The models indicate there is little suitable habitat within the portion of the NRM wolf DPS in Washington, Oregon, or Utah. (See Factor A).

Unsuitable habitat also is important in determining the boundaries of our DPS. Model predictions by Oakleaf *et al.* (in press) and Carroll *et al.* (2003, 2006) and our observations during the past 20 years (Bangs 2004, Service *et al.* 2005) indicate that non-forested rangeland and croplands associated with intensive agricultural use (prairie and high desert) would preclude wolf pack establishment and persistence. This is due to chronic conflict with livestock and pets, local cultural intolerance of large predators, and wolf behavioral characteristics that make them extremely vulnerable to human-caused mortality in open landscapes (See Factor A). We looked at the distribution of large expanses of unsuitable habitat that would form a ''barrier'' or natural boundary separating the current population from both the southwestern and midwestern wolf populations and from the core of any other possible wolf population that might develop in the foreseeable future in the northwestern United States. It is important to note that the DPS Policy does not require complete separation of one DPS from other populations, but instead requires ''marked separation.'' Thus, if occasional individual wolves or packs disperse among populations, the NRM wolf DPS could still display the required discreteness.

Within the NRM wolf DPS, we included the eastern parts of Washington and Oregon and a small portion of north central Utah, because—(1) these areas are within a 60 to 180 mile (97 to 290 km) band from the core wolf population where dispersal is likely; (2) lone dispersing wolves have been found in these areas in recent times (Boyd *et al.* in prep.); (3) these areas contain some suitable habitat (see Factor A for a more in-depth discussion of suitable habitat); and (4) the potential for connectivity exists between these relatively small and fragmented habitat patches and the large blocks of suitable habitat in the NRM wolf DPS. If wolf packs do establish in these areas, they would be more connected to the core populations in central Idaho and northwestern Wyoming than to any future wolf populations that might become established in other large blocks of suitable habitat outside the NRM wolf DPS. As noted earlier, large swaths of unsuitable habitat would isolate these populations from other suitable habitat patches to the west or south.

Although we have received reports of individual and wolf family units in the North Cascades of Washington (Almack and Fitkin 1998), agency efforts to confirm them were unsuccessful and to date no individual wolves or packs have ever been documented there (Boyd and Pletscher 1997, Boyd *et al.* in prep.). Intervening unsuitable habitat makes it highly unlikely that wolves from the NRM population have dispersed to the North Cascades of Washington in recent history. However, if the wolf were to be delisted in the NRM wolf DPS, it would remain protected by the ESA as endangered outside the DPS. We will continue to provide recommendations for appropriate protections on a site-specific basis should wolves ultimately disperse into and form packs in areas outside of the NRM wolf DPS.

We would include all of Wyoming, Montana, and Idaho in the NRM wolf DPS because their State regulatory frameworks apply State-wide. We recognize that this includes large swaths of unsuitable habitat in eastern Wyoming and Montana. We chose not to extend the NRM wolf DPS border beyond eastern Montana and Wyoming to provide clearly delineated, easily understood boundaries for law enforcement purposes, consistency with State wolf regulations and planning efforts, and for administrative convenience. Including all of Wyoming in the NRM wolf DPS would also result in including portions of the Sierra Madre, the Snowy, and the Laramie Ranges. Oakleaf *et al.* (2006, pers. comm.) chose not to analyze these areas of SE Wyoming because they are fairly intensively used by livestock and are surrounded with, and interspersed by, private land, making pack establishment unlikely. While Carroll *et al.* (2003, 2006) indicated it was suitable habitat, the model optimistically predicted that under current conditions these areas were largely sink habitat and that by 2025 (within the foreseeable future) they were likely to be ranked as low occupancy because of increased human population growth and road development. Therefore, we do not consider these areas to be suitable wolf habitat and they were not significant factors in determining the DPS border.

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 consolidation 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 could potentially 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'' as 30 years. We use 30 years to represent both a reasonable timeframe for analysis of future potential threats and relate this timeframe back to wolf biology. Wolves were listed in 1973 and reached recovery levels by 2002 in both the midwestern United States and the NRM wolf DPS. 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 4 years and slightly less outside the Park (Smith, pers. comm., 2005). 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 this NRM wolf DPS is the area within the DPS boundaries 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 over most of the DPS, large portions of it are no longer able to support viable wolf populations.

Significance of a portion of the range is viewed 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 DPS, 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 meta-population in order for the NRM wolf DPS to persist into the foreseeable future.

The following analysis examines all significant factors currently affecting wolf populations or likely to affect wolf populations within the foreseeable future. Factor A considers all factors affecting both currently occupied (defined below in Factor A) and potentially suitable habitat (defined below in Factor A). The issues discussed under Factors B, C, and E are analyzed throughout the entire DPS. Adequate regulatory mechanisms (Factor D) are discussed for each of the 6 States within the DPS and relevant tribes, with an emphasis on the three States with enough suitable habitat to sustain a viable wolf population (Wyoming, Montana, and Idaho).

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

As discussed in detail below, 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 NRM wolf DPS. Occupied suitable habitat in key areas of Montana, Idaho, and Wyoming is secure. These areas include Glacier, Teton, and Yellowstone National Parks and numerous USDA Forest Service Wilderness areas. Nearly two-thirds of the overall area is Federal and State public land. 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 are also within proximity to one another and have enough public land between them to ensure sufficient connectivity to maintain the wolf population above recovery levels.

The NRM wolf DPS is 378,690 mi (980,803 km^2) and includes 158,807 mi^2 (411,308 km^2) of Federal land (42 percent); 20,734 mi^2 (53,701 km^2) of State land (5 percent); 15,068 mi^2 (39,026 km^2) of Tribal land (4 percent); and 180,543 mi^2 (467,604 km^2) of private land (48 percent). The DPS contains large amounts of 3 Ecoregion Divisions—Temperate Steppe (prairie) (120,521 mi^2 [312,148 km^2]); Temperate Steppe Mountain (forest) (156,341 mi^2 [404,921 km^2]); and Temperate Desert (high desert) (101,755 mi^2 [263,544 km^2]) (Bailey 1995). The following analysis focuses on suitable habitat within the DPS and currently occupied areas (which may include intermittent unsuitable habitat).

Suitable Habitat within the DPS—Wolves once occupied or transited most, if not all, of the NRM wolf DPS. However, much of the wolf s historic range within the DPS has been modified for human use and is no longer suitable habitat. We used two relatively new models, Oakleaf *et al.* (in press) and Carroll *et al.* (2006), to help us determine and estimate the current amount of suitable wolf habitat in the NRM wolf DPS. As expected, the Oakleaf *et al.* (in press) and Carroll *et al.* (2006) models predicted different amounts of theoretically suitable wolf habitat where their analysis overlapped because they used different models with different variables over different areas.

Oakleaf's basic model was a more intensive effort that only looked at potential wolf habitat in the NRM. 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 and sheep 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.

Our experience in wolf management for the past 20 years, and the persistence of wolf packs since recovery has been achieved, leads us to concur with the Oakleaf *et al.* (in press) 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, in the parts of Montana, Idaho and Wyoming analyzed, represents the most reasonably realistic prediction of suitable wolf 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'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. 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 of different levels of road and human density in 2025 to suitable wolf habitat in the western United States. We believe that the Carroll *et al.* (2006) model tended to be more liberal in identifying suitable wolf habitat under current conditions compared to Oakleaf model or our field observations indicated but it 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. We believe that may in part explain why Carroll ranked more habitat as potentially suitable than appeared to be realistic based upon our observations of wolf pack persistence to date. 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. 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 on our data on wolf pack persistence for the past 10 years (Carroll *et al.* 2003).

Despite the huge differences in each model's analysis area, layers, inputs, and assumptions, they had similar results and assumptions that are directly related to the NRM wolf DPS. These models were extremely valuable to us as we developed the DPS border and analyzed potentially suitable and unsuitable wolf habitat within the NRM wolf DPS. Both models predicted that most suitable wolf habitat in the NRM wolf DPS 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.

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 NRM wolf DPS was typically characterized by both models as public land with mountainous forested habitat and having 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). We generally agree with these criteria. A mix of these characteristics produced varying degrees of suitability. The full spectrum runs from highly suitable (*i.e.*, the northern range of YNP) to highly unsuitable (*i.e.*, a city or a sheep ranch in eastern Montana) and every imaginable combination between the two extremes.

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. Carroll *et al.* (2006) optimistically ranked 102,588 mi2 (265,703 km^2) and Oakleaf *et al.* (in press) ranked 65,725 mi^2 (170,228 km^2) of suitable habitat in Montana, Idaho and Wyoming. We believe that these models' assessments are reasonable and they generally support earlier predictions about wolf habitat suitability in the NRM (Service 1980, 1987, 1994). We used their findings to make interpretations and predictions about wolf pack distribution in relation to potentially suitable habitat in the NRM wolf DPS.

In the NRM wolf DPS, the estimated amounts of potentially suitable wolf habitat predicted by Carroll *et al.* (2006) in each State are—40,924 mi^2 (105,993 km^2) in Montana; 31,856 mi^2 (82,507 km^2) in Idaho; 29,808 mi^2 (77,202 km^2) in Wyoming; 2,556 mi^2 (6,620 km^2) in Oregon; 1,655 mi^2 (4,286 km^2) in Utah; and 297 mi^2 (769 km^2) in Washington. For perspective, a single wolf pack territory normally averages 200–500 mi^2 (518–1,295 km^2). Thus, approximately 28 percent of the NRM wolf DPS would be ranked as suitable habitat in accordance with the most liberal model available (Carroll *et al.* 2006). We used the Carroll model to assess relative habitat suitability in the entire NRM wolf DPS because the Oakleaf model only analyzed areas in Montana, Idaho, and Wyoming. 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 NRM wolf DPS. This included the locations estimated in the 1987 wolf recovery plan (Service 1987), the primary analysis areas analyzed in the 1994 EIS for the GYA (24,600 mi^2 [63,700 km^2]) and central Idaho (20,700 mi^2 [53,600 km^2]) (Service 1994), information derived from theoretical models by Carroll *et al.* (2006) and Oakleaf *et al.* (in press), and our nearly 20 years of field experience managing wolves in the NRM. Oakleaf predicted that there was 65,725 mi^2 (170,227 km^2) of suitable habitat in Montana, Idaho, and Wyoming. Carroll predicted that there was 107,096 mi^2 (277,377 km^2) of suitable habitat within the NRM wolf DPS, and 102,588 mi^2 (265,702 km^2) (96 percent) of that was in Montana, Idaho, and Wyoming. We agree with Oakleaf *et al.* (in press) on the area they concluded is suitable wolf habitat and that there is roughly 65,000 mi^2 (168,000 km^2) of suitable wolf habitat that is realistically available for persistent wolf pack formation in the NRM wolf DPS in Montana, Idaho, and Wyoming under current conditions. Although Carroll determined there maybe some potentially suitable wolf habitat (<5,000 mi^2 [13,000 km^2]) in the NRM wolf DPS outside of Montana, Idaho and Wyoming, we believe it is marginally suitable at best and is insignificant to wolf population recovery because it occurs in small isolated fragmented areas.

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 (See Figure 2) (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 wolves for longer than one 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 when the numerical and distributional recovery goal was first reached (Service *et al.* 2001–2005). This general distribution of wolf packs would be maintained after delisting because delisting would occur only if Montana, Idaho, and Wyoming committed to manage wolves in their State above the minimum 10 breeding pair and 100 individual wolves recovery level per State. We included areas between the core recovery segments as occupied wolf habitat even though wolf packs did not use certain portions of it. While models ranked some of it as unsuitable habitat, those intervening areas are important to maintaining the meta-population 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.

We estimate approximately 106,384 mi² (275,533 km²) of occupied habitat in parts of Montana (48,343 mi² [125,208 km²]); Idaho (44,907 mi² [116,309 km²]); and Wyoming (13,134 mi² [34,017 km²]). As noted above, occupancy is limited to these three States and includes both suitable and unsuitable areas (especially in the areas between wolf pack territories). Although currently occupied habitat includes some prairie (1,733 mi² [4,488 km²]) and some high desert (9,451 mi² [24,478 km²]), wolf packs did not use these habitat types successfully. 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 70,844 mi² (183,485 km²) Federal (67 percent); 4,717 mi² (12,217 km²) State (4.4 percent); 1,183 mi² (3,064 km²) Tribal (1.7 percent); and 27,675 mi² (71,678 km²) private (26 percent).

We determined that the current wolf population is a three segment meta-population and that the overall area used by the NRM wolf population has not significantly expanded since the population achieved recovery in 2002. This indicates there is probably limited suitable habitat for the population to expand significantly beyond its current borders. Carroll's model predicted that 63,901 mi² (165,503 km²) of suitable habitat (62 percent) was within the occupied area, however, the model's remaining potentially (38 percent) suitable habitat in Montana, Idaho, and Wyoming was often fragmented and in smaller, more isolated patches. 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 meta-population is insignificant to maintaining the NRM wolf population's viability or maintaining the population throughout a significant portion of its range in the NRM wolf DPS. Oakleaf predicted that there was 65,725 mi² (170,227 km²) of suitable habitat in Montana, Idaho, and Wyoming. Roughly 57,374 mi² (148,599 km²) or 87 percent of that is within the area we describe as the area currently occupied by the NRM wolf population. We consider this 57,374 mi² (148,599 km²) of occupied suitable habitat as the significant portion of the recovered wolf population's range because it is the only area required to maintain the wolf population above recovery levels for the foreseeable future and it is important to the continued existence of wolves in the NRM wolf DPS. Threats to this area would have the effect of threatening the viability of the NRM wolf DPS. These 57,374 mi² (148,599 km²) are also necessary for maintaining a viable, self-sustaining, and evolving representative meta-population in order for the NRM wolf DPS to persist into the foreseeable future.

We believe the remaining roughly 13 percent of theoretical suitable wolf habitat that is unoccupied is primarily outside the NRM wolf population area, is unimportant to maintaining the recovered wolf population, and thus is not a significant portion of the range of the NRM wolf DPS. The requirement that Montana, Idaho, and Wyoming each maintain at least 10 breeding pairs and 100 wolves in mid-winter insures that the recovered wolf population will be maintained throughout a significant portion of its range in the NRM wolf DPS into the foreseeable future. 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 NRM wolf DPS did not require land-use restrictions or curtailment of traditional land-uses in the northwestern United States because there were 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 NRM wolf DPS need be modified to maintain a recovered NRM wolf population into the foreseeable future. We do not anticipate overall habitat changes in the NRM wolf DPS 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.* 2002; Oakleaf in press).

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

While the northwestern Montana recovery area (>19,200 mi² [>49,728 km²]) also has a core of suitable habitat (Glacier National Park and the Bob Marshal 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.* 2005). This exposes wolves to higher levels of human-

caused mortality and thus 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 a delisted wolf population can be safely maintained above recovery levels. Important suitable wolf habitat is in public ownership and the States and Federal land-management agencies will 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. Ninety-six percent of suitable habitat in the NRM wolf DPS occurs in these three states (Carroll *et al.* in press). Oakleaf *et al.* (in press) only analyzed habitat in those three states because they believed there was limited wolf habitat adjacent to the areas previously identified during recovery planning (Service 1987, 1994). The areas Carroll *et al.* (2006) predicted as theoretically suitable wolf habitat in the NRM wolf DPS within Washington, Oregon, and Utah were small and often fragmented but primarily were in public land ownership. They were not subject to any threats that could affect wolf recovery in the NRM wolf DPS. While they will be visited by dispersing wolves and may support occasional wolf packs, they are an insignificant amount of habitat and are not needed to maintain the recovered wolf population in the NRM wolf DPS. Therefore, these areas do not appear to constitute a significant portion of the range of the NRM wolf DPS.

The recovery plan (Service 1987), the meta-population structure recommended by Fritts (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 meta-population (Oakleaf *et al.* 2006; Carroll *et al.* 2006; vonHoldt *et al.*, in litt., 2005; Boyd *et al.* in prep.). To date, from radio-telemetry monitoring we have documented routine wolf movement between wolves in Canada and northwestern Montana (Pletscher *et al.* 1991; Boyd and Pletscher 1997), occasional wolf movement between wolves in Idaho and Montana, and at least eleven wolves have traveled into the GYA (vonHoldt *et al.*, in litt., 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 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) committed to maintain natural connectivity to ensure the maintenance of genetic integrity 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, moose, and (only in the GYA) bison. Bighorn sheep, mountain goats, and pronghorn antelope are also common but not important, at least at this time, as wolf prey. In total, 100,000 to 250,000 wild ungulates are estimated in each State where wolf packs currently exist. All the States in the NRM wolf DPS 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 affect a recovered wolf population.

Cattle and sheep are at least twice as numerous as wild ungulates even on public lands (Service 1994a). The only areas large enough to support wolf packs, but lacking livestock grazing, are Yellowstone and Glacier National Parks and some adjacent USDA Forest Service Wilderness 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, Bangs *et al.* 2004, 2005, Service *et al.* 2002). This is discussed further under Factor 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 areas occurs in such large contiguous blocks (Service 1987; Carroll *et al.* 2006; Oakleaf *et al.* in press). 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 in the NRM wolf DPS (such as east-central Oregon and the smaller isolated fragments of suitable habitat just outside of the area currently occupied by wolf packs) 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 identified by 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 thought to be suitable can be successfully occupied by wolf packs.

Strips and smaller (less than 1,000 mi^2 [2,600 km^2]) patches of theoretically suitable habitat land (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 wide-ranging 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 because this type of edge effect was not of overriding importance in either the Oakleaf or Carroll models.

For these reasons, we believe that the wolf population in the NRM wolf DPS will remain centered in northwestern Montana, central Idaho, and the GYA. This is the significant portion of the wolf's range in the NRM that is important or necessary for maintaining a viable, self-sustaining, and evolving representative population or populations in order for the NRM wolf DPS to persist into the foreseeable future. Therefore, we believe that the suitable habitat we predicted within, and adjacent to these areas, are the only areas that are biologically significant to maintaining a viable, self-sustaining, and evolving representative meta-population in the NRM wolf DPS that will persist into the foreseeable future. These areas comprise the only significant portion of the gray wolf's range in the NRM wolf DPS.

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. However, occupancy of such theoretically suitable habitats outside of the core recovery areas will not play a significant role in maintaining a long-term viable wolf population. Therefore, it appears that within the NRM wolf DPS, there are no significant portions of the wolf's range that are currently unoccupied. Most (roughly 87 percent) suitable wolf habitat in the NRM wolf DPS and all suitable habitat significant to maintain a recovered wolf population is, and will remain, occupied by wolves.

We therefore 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 NRM wolf DPS. Occupied suitable habitat is secured by core recovery areas in northwestern Montana, central Idaho, and the GYA. These areas include Glacier, Teton, and Yellowstone National Parks and numerous USDA Forest Service Wilderness areas. Over two thirds of the overall area is Federal and State public land. 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 are also within proximity to one another and have enough public land between them to ensure sufficient connectivity to maintain the wolf population above recovery levels.

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). These areas contain approximately 87 percent of the suitable habitat in the NRM wolf DPS. Unsuitable habitat, and small, fragmented areas of suitable habitat away from these core areas, largely represent geographic locations where wolf packs cannot persist. Although they may have been historic habitat, many of these areas are no longer suitable and are not important or necessary for maintaining a viable, self-sustaining, and evolving representative wolf population in the NRM wolf DPS into the foreseeable future, and are not a significant portion of the range of the NRM wolf DPS.

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 the core areas of Idaho, Montana, and Wyoming. Delisting the NRM wolf DPS would not threaten recovery by excessive changes in mortality rates caused by commercial, recreational, scientific, or education purposes. However, as discussed later in Factor D, there are potential concerns that human-caused mortality associated with management of wolves in Wyoming as predatory animals could exceed sustainable levels.

Since their listing under the ESA, no gray wolves have been legally killed or removed from the wild in the NRM wolf DPS for commercial, recreational, or educational purposes. In the area of the tentative NRM wolf DPS, about 3 percent of the wolves captured for scientific research, nonlethal control, and monitoring have been accidentally killed. Some wolves may have been illegally killed for commercial use of the pelts and other parts, but illegal commercial trafficking in wolf pelts or wolf parts is believed to be rare. Illegal capture of wolves for commercial breeding purposes also is possible, but is believed to be extremely rare. The potential for ''take'' prosecution provided for by the ESA is believed to have 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 and 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 2004, the Service and our cooperating partners have captured over 716 NRM wolves for monitoring, nonlethal control, and research purposes with 23 accidental deaths. If the NRM DPS were to be 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 and Post-Delisting Monitoring). We expect that capture-caused mortality by Federal agencies, universities, States, and Tribes conducting wolf monitoring, nonlethal control, and research will remain around 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 the States where wolves would be considered for delisting, except Wyoming, any subsequent legal take 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 Wyoming's plan. 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 morality (Fuller *et al.* 2003). This means that wolf populations are quite resilient to human-caused mortality if it can be regulated. The States 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 in Factor D). The regulated take of those surplus wolves would not affect wolf population recovery or viability in the NRM wolf DPS 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. Current state laws in Washington, Oregon, and Utah do not allow public take of wolves for recreational or commercial purposes. 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 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. If Wyoming's regulatory framework is modified and approved by the Service, and if delisting were to occur, the States and Tribes would regulate human-caused morality for recreational and commercial uses to ensure it is not excessive or does not jeopardize wolf population goals. 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 wolf DPS. However, there are no indications that these diseases are of such magnitude that the DPS is in danger of extinction, particularly within the core areas of Idaho, Montana, and Wyoming. Similarly, there are no indications that predation poses a significant threat to the NRM wolf DPS. 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 wolves were delisted in the DPS.

Disease—Wolves in the NRM wolf DPS 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 would be regulated in an area and over an appropriate time period by the State to ensure populations are maintained above recovered levels.

Canine Parvovirus (CPV) infects wolves, domestic dogs, foxes, coyotes, skunks, and raccoons. The population impacts of CPV occur via diarrhea-induced dehydration leading to abnormally high pup mortality (WI DNR 1999a). Clinical CPV is characterized by severe hemorrhagic diarrhea and vomiting-debility and subsequent mortality is a result of dehydration, electrolyte imbalances, and shock. The 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 Montana Fish, Wildlife and Parks (M. Atkinson, Montana Fish, Wildlife and Parks, 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 is 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 paramyxo-virus (Kreeger 2003). It is common in domestic dogs and some wild canids, such as coyotes and foxes in the areas of the NRM wolf DPS (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 (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 2003b). 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 the NRM wolf DPS despite the wolves' high exposure to it.

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

Sarcoptic mange is caused by a mite (*Sarcoptes scabeii*) 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. 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. Mange has not been confirmed in wolves from Idaho or northwestern Montana. In packs with the most severe infestations, pup survival appeared low and some adults died (Jimenez in prep.). In addition, we euthanized three wolves with severe mange. We predict that mange in the NRM wolf DPS 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 in two members of the Battlefield pack in the Big Hole Valley of southwestern Montana in 2005, but their infestations were not severe. Its source is unknown, but was likely domestic dogs.

Rabies, canine heartworm, blastomycosis, brucellosis, neosporsis, 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 1995; Mech and Kurtz 1999; Thomas in litt. 1998; Wisconsin Department of Natural Resources 1999; Kreeger 2003). Canid rabies caused local population declines in Alaska (Ballard 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 (Thomas in litt. 2000), 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.* 2005), wolf-to-wolf contacts will not likely lead to a continuing increase in disease prevalence (Mech in litt. 1998). 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 wolves in the NRM wolf DPS 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 NRM wolf DPS 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 (See State plans in Factor D). 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; Mech and Peterson 2003). 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.* in prep.). 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. Wolves are occasionally killed by prey they are attacking, but those instances are few. Since the 1980s, wolves in the NRM have died from wounds they received while attacking prey (elk, moose, and bison) on about a dozen occasions. That level of mortality could not significantly affect wolf population viability or stability.

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 DPS (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 cause a level of mortality that would significantly affect a wolf population's viability in the NRM wolf DPS. (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.* in Mech and Boitani 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 (Boyd 2003) 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 1997), 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 wolf distribution in the NRM wolf DPS (Bangs *et al.* 2004). No wolf packs have successfully established and persisted solely in open prairie or high desert habitats that are used for intensive agriculture production in the past 20 years (Service *et al.* 2005).

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. The annual survival rate of mature wolves in northwestern Montana and adjacent Canada from 1984 to 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, pers. comm., 2005). Wolves outside of large remote areas had survival rates as low as 54 percent in some years. This is among the lower end of adult wolf survival rates that an isolated population segment can sustain (Fuller *et al.* 2003; Smith, pers. comm., 2005).

Some information suggests these numbers could be overestimated, while other information suggests it could be underestimated. 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 under-estimated. However, the 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) (Smith, pers. comm., 2005) from 1984 through 2004 indicates that about 26 percent of the adult-sized wolves die every year, so annual adult survival averages about 74 percent, which typically results in wolf population growth (Keith 1983; Fuller 2003). Humans caused just over 75 percent of all radio-collared wolf deaths (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; and combined they removed nearly 20 percent of the population annually and are responsible for 60 percent of all known wolf death.

Wolf mortality from agency control of problem wolves (which includes legal take by private individuals under defense of property regulations in section 10(j) rules) is estimated to remove around 10 percent of the adult radio-collared wolves annually. Since 1995, 28 wolves have been legally killed by private citizens under Federal defense of property regulations (Service 1994 and 2005) 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 292 problem wolves from 1987 to 2004, indicating that private citizen take under State defense of property laws will not significantly increase the overall rate of problem wolf removal. 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, also removing around 10 percent the adult wolf population annually. A comparison of the overall wolf population and the number of wolves removed using different analysis than just radio-collared wolves indicates agency control removes, on average, about 6 percent of the overall wolf population annually (Service *et al.* 2005). 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 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 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, and is now at least twice as numerous as needed to meet recovery levels (Service 1987, 1994).

If the DPS were to be delisted, state management would likely increase the mortality rate in the NRM wolf population, outside National Parks, National Wildlife Refuges, and Tribal reservations, from its current level of about 26 percent annually. A level of wolf mortality as high as 50 percent is typically sustainable on an annual basis (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 NRM wolf DPS that averaged about 20 percent per year, 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 discussion of adequate regulatory mechanisms and Wyoming State law under 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 the DPS with the future mechanisms that will provide the framework for wolf management after delisting. These regulatory mechanisms are carried out by the State governments included in the DPS, with the main emphasis placed on those States that make up the significant portion of the range in the DPS, Idaho, Montana, and Wyoming. State and Tribal programs are designed to maintain a recovered wolf population while minimizing damage by allowing for removal of wolves in areas of chronic conflict or in unsuitable habitat. The three States have proposed wolf management plans that will govern how wolves are managed if delisted. As discussed below, we have approved the Idaho and Montana plan because they have proposed management objectives of maintaining at least 10 breeding pairs and 100 wolves per State by managing for a safety margin of 15 packs in each State. However, we have been unable to approve the Wyoming plan because it does not provide for the same sustainable levels of protection.

Current Wolf Management

The 1980 and 1987, NRM wolf recovery plans 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 wolf population from achieving recovery. In 1988, the Service developed an interim wolf control plan that applied to Montana and Wyoming, but was amended in 1990 to include Idaho and eastern Washington. 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 (Bangs *et al.* 2005). Therefore, we developed a set of guidelines under which depredating wolves could be harassed, moved, or killed by agency officials to prevent chronic livestock depredation. 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.* 2005).

The conflict between wolves and livestock has resulted in the average annual removal of 6–10 percent of the wolf population (Bangs *et al.* 1995; Bangs *et al.* 2004, 2005; Service *et al.* 2002; Smith, pers. comm., 2005). 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.

Wolves within the NRM DPS are classified as either endangered or members of a non-essential experimental population. Wolf control in the experimental population areas of the DPS is more liberal than in the areas where wolves are listed as endangered. In the area of the DPS 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. In the nonessential experimental population areas, wolf control protocols by agencies and the public are directed by the experimental population regulations, promulgated under section 10(j) of the ESA (59 FR 60252, November 22, 1994; 70 FR 1285, January 6, 2005). These regulations specify which wolves can be designated as problem animals, what forms of control are allowed, and who can carry them out.

Current wolf control consists of the minimum actions believed necessary to reduce further depredations, and includes a wide variety of non-lethal and lethal measures (Bangs and Shivik 2001; Bangs *et al.* 2004; Bangs *et al.* 2005). However, while helpful, non-lethal methods to reduce wolf livestock conflict are often only temporarily effective (Bangs and Shivik 2001; Bangs *et al.* 2005; 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.* 2005). Between 1987 and 2005, we removed 292 wolves and relocated wolves 117 times to reduce the potential for chronic conflicts with livestock. Of those wolves, 19 wolves incurred injuries from capture/relocation that ultimately resulted in their death or removal from the wild (7 in Montana, 8 in Idaho, 4 in Wyoming). Accidental mortality from capture during non-lethal control was low (3 percent) and not a significant portion of total mortality in the wolf population.

At the end of 2004, 62 to 100 percent of the suitable wolf habitat in the NRM wolf DPS was occupied by resident wolf packs (see discussion in Factor A). 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 them 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 12 to 20 percent annually and still not significantly impact wolf population recovery (Smith, pers. comm.). The State management laws and plans will 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 need for wolf control is the availability of wild ungulate prey. Important wild ungulate prey in the NRM wolf DPS 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.

Changes in livestock availability have also 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. 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 YNP, Glacier National Park including adjacent USFS wilderness, 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 2002). This overlap between wolf pack territories and livestock has led to the conflict between wolves and livestock because depredation control practices discourage chronic use of livestock as prey.

Other management control tools used for managing wolf conflict were 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 28 (less than 7 percent of the 292 wolves removed for livestock depredations from 1987 to 2004) experimental population wolves were shot by private landowners under shoot-on-sight permits in areas of chronic livestock depredation or as they attacked or harassed livestock.

In the NRM wolf recovery area, reports of suspected wolf-caused damage to livestock are investigated by USDA/APHIS-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 occurred in Idaho, USDA–WS also coordinates with Nez Perce Tribal personnel. Since the beginning of 2005, USDA–WS began to coordinate and conduct wolf control in cooperation with Montana Fish, Wildlife and Parks (MFWP) and, since the beginning of 2006 with the Idaho Department of Fish and Game (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 of Wildlife 2002; Fischer 1989). That program paid an average of $75,580 annually from 2000 to 2004.

Regulatory Assurances in States Within the Significant Portion of the Range

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. Governors from the three States renewed that agreement in April 2002.

The wolf population in the NRM achieved its numerical, distributional, and temporal recovery goal, as specified in the recovery plan, in December 2002. However, to delist the species we realized that regulatory assurances would be necessary and 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 various 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 the States in the significant portion of the range to regulate human-caused mortality of wolves. Several issues were key to the Service approving the plans. First the States had to provide regulations that would allow regulatory control, define a pack biologically consistent with the Service's definition of breeding pair, and manage the population to maintain those 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 management plans, wolf biology, peer review, and the States' response to the peer review. Those State plans and our recommendations can be viewed at: *http://westerngraywolf.fws.gov/*. 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 its management plan did not allow us to approve its approach to wolf management. 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. Wyoming has appealed that decision and the case is under consideration by the Tenth Circuit Court of Appeals.

Since no wolves currently live in Washington, Oregon, or Utah (the NRM wolf population lives only in Montana, Idaho, and Wyoming), and there is very little suitable habitat in the NRM wolf DPS outside of that currently occupied in Montana, Idaho, and Wyoming, we did not request the other three States to prepare wolf management plans. Furthermore, any potential wolves outside of Montana, Idaho, and Wyoming are not needed to maintain the recovered wolf population. However, we reviewed the regulatory framework of all States within the NRM wolf DPS to assess all potential threats to that wolf population.

Montana—The gray wolf was listed under the Montana Nongame and Endangered Species Conservation Act of 1973 (87–5–101 MCA). Senate Bill 163 was passed by the Montana Legislature and signed into law by the Governor in 2001. It establishes the current legal statutes 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) which 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 MFWP 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 will still occur, but is to be prosecuted under State law and MFWP 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 as required by Montana State law, and recommended that the Updated Advisory Council alternative be selected as Montana's Final Gray Wolf Conservation and Management Plan. 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 levels of 10 breeding pairs in Montana by managing for a safety margin of 15 packs (see Post-delisting monitoring section). 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 less than 15 packs. The States would develop their pack definitions to approximate the current breeding pair definition, but would measure wolf populations by the Service's current pair definition. Wolves would not be deliberately confined to any specific areas of Montana, but their distribution and numbers would be managed adaptively based upon 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 meta-population structure. Montana's plan predicts that under State management the wolf population would increase to between 328 wolves or 27 breeding pairs and 657 wolves or 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 MFWP 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 can 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 of and 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 confirmed that livestock were being attacked by wolves. The MFWP intends to enlist and direct 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 Montana will implement the commitments it made in its current laws, regulations, and wolf plan.

Idaho—The Idaho Department of Fish and Game (IDFG) Commission has authority to classify wildlife under Idaho Code 36–104(b) and 36–201. The wolf was classified as endangered until March 2005, when the IDFG Commission reclassified the gray wolf to a big game animal IDAPA 13.01.06.100.01.d. The big game classification will take effect upon Federal delisting, and until then, they will be managed under Federal status. As a big game animal, State regulations will adjust human-caused wolf mortality to ensure recovery levels are exceeded. Title 36, in the Idaho statutes, currently has laws regarding penalties associated with illegal take of big game animals. These rules are consistent with the legislatively adopted Idaho Wolf Conservation and Management Plan (IDP) (2002) and big game hunting restrictions currently in place. The IDP states that wolves will be protected against illegal take as a big game animal under Idaho Code 36–1402 and 36–1404, and also under the flagrant violation law Idaho Code 36–202(h) at the costs specified under Idaho Code 36–1404.

The IDP 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 IDP. The Service provided technical advice to the Committee and reviewed numerous

drafts before the IDP was finalized. In March 2002, the IDP was adopted by joint resolution of the Idaho Legislature. The IDP can be found at: *http://www.fishandgame.idaho.gov/cms/wildlife/wolves/wolf_plan.pdf.*

The IDP calls for IDFG to be the primary manager of wolves once delisted, and 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 will be more liberal if there are over 15 packs and more conservative if there are fewer than 15 packs in Idaho. The wolf population will be managed by defense of property regulations similar to those now in effect under the ESA. Public harvest will 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 and guides and others hunt. The IDP allows IDFG to classify the wolf as a big game animal, furbearer, or special classification of predator so that human-caused mortality can be regulated. In March 2005, the IDFG Commission proposed that upon delisting the wolf would be classified as a big game animal with the intent of managing them similar to black bears and mountain lions, including regulated public harvest when populations are above 15 packs. The IDP calls for the State to coordinate with USDA-WS to manage depredating wolves depending on the number of wolves in the State, allowing more liberal control when wolf populations exceed 15 packs and more conservatively when there are less than 15 packs. 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 will be focused on maintaining sufficient prey populations to sustain viable wolf and other carnivore populations and hunting. IDFG has implemented 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 will be focusing on improving mule deer conditions. The Clearwater Elk Initiative also is an attempt at improving 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 IDP to maintain a recovered wolf population. The Service has every confidence Idaho will implement the commitments it made in its current laws, regulations, and wolf plan.

Wyoming—In 2003, Wyoming passed a State law that, upon delisting from the ESA, would designate wolves as trophy game in limited areas in Wyoming, Yellowstone National Park, Grand Teton National Park, John D. Rockefeller Memorial Parkway, and the adjacent USFS designated wilderness areas. The ''trophy game'' status allows the Wyoming Game and Fish Commission and Wyoming Game and Fish Department (WYGF) to regulate the method of take, seasons, types, and numbers that can be killed. However, this classification changes to ''predatory animal'' depending on the number of wolf packs in specific areas in Wyoming. When wolves are classified as a ''predatory animal'' they are under the jurisdiction of the Wyoming Department of Agriculture. Species designated as ''predatory animals'' are considered pests, and may be taken by anyone, at any time, without limit, and by any means, except poison.

State law defined a pack as five wolves traveling together. When there are 7 or more wolf packs in Wyoming outside of the Yellowstone and Grand Teton National Parks, the Parkway, and adjacent wilderness areas or there are 15 or more wolf packs in Wyoming, all wolves in Wyoming outside of those two National Parks and the adjacent wilderness areas would be classified as predatory animals. If there are fewer than 7 packs outside of the National Parks *and* less than 15 packs in Wyoming, the area where wolves would be classified as trophy game would be expanded beyond the National Parks and adjacent wilderness areas to include an area roughly west of Cody and north of Pinedale, Wyoming, to the Idaho and Montana State borders. Any time the number of wolf packs outside the National Park units increased to 7 or more, or there were 15 or more packs in Wyoming, the trophy game designation is removed and predatory animal status would apply to all wolves outside of the National Park units and the adjacent wilderness areas. The areas where the predatory animal designation applies would change back and forth every 90 days based on the number of wolf packs.

The State law removes the legal authorization for the WYGF to manage wolves, unless there are fewer than 7 packs outside the National Parks and there are less than 15 packs in Wyoming, including those in the National Park units. Under such conditions, WYGF would temporarily gain authority to manage wolves, but that authority would end when pack numbers increased to 15 in the State or 7 outside the National Park units and adjacent wilderness areas. WYGF, being the wildlife agency in Wyoming, already manages other large predators and wolf prey. They have the professional knowledge and skill that is necessary to make appropriate decisions to effectively manage wolves in the State and need the management authority in order to accomplish this.

The State wolf management plan generally attempts to implement the State law, with some notable exceptions. It is different than State law in that it only commits to maintaining 7 or more wolf packs outside the National Park units and assumed 8 packs would be present in National Park units. ''Trophy game'' status would be enacted over the larger area (roughly that part of northwestern Wyoming east of Cody and north of Pinedale) only if there were 7 or fewer packs outside the Park units. The area of predatory animal status would remain in effect over the remainder of Wyoming regardless of the number of packs.

Like State law, the plan allows livestock owners to shoot wolves designated as trophy game to defend their livestock and pets on private and public land from wolf attack or harassment. The plan commits to intensive wolf monitoring using standard methods, routine monitoring of diseases and wolf physical characteristics through mandatory reporting of wolf kills and pelts, and a balanced information and education program about wolves in Wyoming.

Wyoming's State law and its wolf management plan were not approved by

the Service as an adequate regulatory mechanism to maintain a recovered wolf population. We intend to propose to delist the NRM DPS when the State of Wyoming addresses the deficiencies in the State Law and management plan as discussed below.

The Service's recovery goal for each State is maintaining at least 10 breeding pairs, and at least 100 wolves per State. We define a breeding pair as an adult male and an adult female that raise at least two pups until December 31. This breeding pair definition is likely equivalent to five or six wolves traveling together in winter (our population estimates are made for the estimated wolf population on December 31st of each year). Our current data support the concept that 15 packs of 5 or more wolves traveling together in winter is equivalent to about 12–15 breeding pairs. Winter was picked because wolves breed in mid-February and the major causes of wolf mortality, wolf control and illegal killing, peak in summer and fall. There is no statistical difference between using either five or six wolves traveling together in winter to develop a biological equivalent definition of pack to the current definition of a breeding pair.

Under Wyoming law, a pack is defined as just 5 wolves, however, the law also allows that if a pack of 10 or more wolves has more than 2 breeding females, a single pack could be classified as multiple breeding pairs. This definition becomes problematic when using it as a biological equivalent to breeding pair because it lacks the flexibility to accommodate variations in pups' survivability. WYGF needs the flexibility to react to new scientific information as it becomes available. For instance, in 1999, and again in 2005, pup production and survival was significantly decreased. In Wyoming, 2002 and 2003, and in Montana, 2004 and 2005, mange was infesting some packs and wolves with mange were not expected to survive the winter decreasing the overall population size. In these types of situations, five wolves traveling together would not be the equivalent to an adult male and female, and two pups on December 31st. With State law dictating biological definitions, WYGF would be prevented from adjusting management and potential levels of human-caused mortality even though they recognize that wolf recruitment was lower than normal and any wolves removed from the population would be less likely to be replaced, as was the case in the situations discussed previously. Scientific decisions need to be made by WYGF in coordination with the other States. To approve the Wyoming State plan, the law and the management plan needs a definition of pack that is biologically equivalent to the Service's definition of breeding pair, which gives the WYGF the flexibility to manage human-caused mortality for population fluctuations.

In order for the WYGF to manage human-caused mortality, they need to be given the regulatory authority to manage wolves by designating wolves as a trophy game species and allowing WYGF to manage for conservation above the recovery levels of 10 packs and 100 wolves in the State. Wolves rarely use the wilderness areas outside the Park units and many southern Park packs leave the Park units in winter regularly utilizing habitat in non-wilderness public lands and some private lands. This means most packs in Wyoming would be subject, under predatory animal status, to unregulated and unlimited human caused mortality. Only when the number of packs falls below seven outside the Park units, would the predatory animal status be changed and management by WYGF be authorized by State law. This could result in unregulated human-caused mortality continuing until the population was below the minimum state plan objective of seven wolf packs outside the Parks.

The more protective and larger trophy game area and WYGF's legal authorization to manage sport harvest would not go into effect until the population crossed below the 15 pack threshold and there were less than 7 packs left to protect or manage outside of the National Park units. Trophy game status, by itself, would not reduce wolf mortality from defense of property by Wyoming livestock, pet, and hunting dog owners, agency control of problem wolves, or illegal killing, or any natural causes of mortality. Once there were fewer than 15 packs in Wyoming and fewer than 7 packs outside the Park Units, WYGF could do little except decline to authorize additional wolf mortality through sport hunting and trapping seasons. This limited authority and the low thresholds that trigger change in status mean that the wolf population would be at levels too low for WYGF to undertake effective action to conserve the wolf population above recovery levels. WYGF needs to be given the regulatory authority to adaptively manage the species throughout the State of Wyoming to account for fluctuations in population levels.

The potential success of the current Wyoming law and wolf plan to maintain its share of wolves in the NRM DPS depends on Yellowstone National Park having at least eight packs. In our September 9, 2005, weekly wolf report, we provided our annual mid-year estimate of the wolf population in the NRM. That was only an interim count but it appeared that wolf numbers are down substantially in Yellowstone National Park. Canine parvo-virus is suspected of causing low pup survival in the Park and pack conflicts over territory appears to have reduced the number of wolves and packs in the Park from 16 breeding pairs and 171 wolves in 2004, to 6 or 7 breeding pairs and 118 wolves in 2005 (Service Sept. 9, 2005). While there are currently more than 7 wolf packs outside the Park because of the Act s protections, it is likely that predatory animal status—if implemented at this time—would quickly reduce wolf packs outside the Park to minimum levels, and based on current conditions only 12–14 packs would exist in the State. Wyoming State law allows no regulation of human-caused mortality until the population falls below seven packs outside the Parks. Wyoming'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.

Wyoming State law and predatory animal status minimizes opportunities for adaptive professional wildlife management by WYGF, confines wolf packs primarily to Yellowstone National Park, depends on at least eight Park wolf packs to constitute most of the wolves in Wyoming, and minimizes the number of wolves and wolf packs outside the Park. We have previously determined that Wyoming State law would prohibit a timely response to manage wolves effectively by WYGF should modification in state management of wolves be needed to prevent the population from falling below recovery levels of at least 10 breeding pairs and 100 wolves for each of the three core States. Based on these inadequacies, the Service is not assured that Wyoming's State law and wolf management plan would maintain the Wyoming segment of the wolf population above recovery levels.

In accordance with the requirements of the ESA and the positive 90 day finding made by the Service on October 25, 2005, the Service is continuing to carefully review 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. At this time we continue to believe that current

State law and the State wolf plan in Wyoming do not provide adequate regulatory assurances that Wyoming's share of the NRM DPS population will be maintained into the foreseeable future and thus that the overall wolf population's distribution and numbers will 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 consider proposing the delisting of wolves throughout the NRM wolf DPS.

Regulatory Assurances in Other States and Tribal Areas Within the DPS

Washington—Wolves in all of Washington are endangered under State law (RCW 77.12, WAC 232.12.014; these provisions may be viewed at: *http://www.leg.wa.gov/RCW/index.cfm?section=77.12.020&fuseaction=section* and *http://www.leg.wa.gov/WAC/index.cfm?section=232-12-014&fuseaction=section.* If the NRM DPS is delisted, those areas in Washington included in the NRM wolf DPS would still remain listed as endangered by Washington State law, which prohibits nearly all forms of human-caused mortality. The areas in Washington not included in the NRM DPS would remain listed as endangered under both State and Federal law.

At this time, there are no known wolves in Washington and there is little suitable habitat in that part of eastern Washington in the NRM wolf DPS. Wolf management in Washington will have no effect on the recovered wolf population that resides in the significant portion of the range of Montana, Idaho, and Wyoming.

There is currently no Washington State recovery or management plan for wolves. However, Interagency Wolf Response Guidelines are being developed by the Service, WDFW, and USDA–WS to provide a checklist of response actions for five situations that may arise in the future. There are no known wolves in Washington at this time, but a few individuals may occasionally disperse into the State from nearby populations in Idaho, Montana, and Canada. There are no plans to reintroduce wolves to Washington.

Oregon—The gray wolf has been classified as endangered under the Oregon Endangered Species Act (ESA; ORS 496.171–192) since 1987. If federally delisted, wolves in that portion of the NRM DPS in Oregon would remain listed as endangered under State law. There are currently no known wolves in Oregon and wolf management will have no effect on the recovered wolf population that resides in the significant portion of the range of Montana, Idaho, and Wyoming.

The Oregon Wolf Management Plan, as approved in February 2005, called for 3 legislative actions and included several provisions that could not be implemented unless certain actions were taken by the Oregon Legislature. The 2005 Oregon Legislative Assembly considered, but did not adopt, the proposed legislative actions. As a result, the Fish and Wildlife Commission is currently going through a public review process to amend the Oregon Plan and discuss legislative proposals. The Commission remains on record as calling for those legislative enhancements; however, implementation of the Oregon Plan does not depend upon them. Formal amendment of the Oregon Plan is expected to result in a strategy for conserving the gray wolf in Oregon, identify the conditions necessary for delisting the wolf under State law, and provide management after delisting. Under the Oregon Department of Fish and Wildlife management plan, conservation of the gray wolf will be directed by established objectives for wolf distribution, population management, and monitoring. Wolves will not be deliberately confined to any specific areas of the State, but their distribution and numbers will be managed adaptively based upon ecological factors, wolf population status, conflict mitigation, and human social tolerance.

Under the Oregon Wolf Management Plan, the gray wolf will remain classified as endangered under State law until the conservation population objective for eastern Oregon is reached. Once the objective is achieved, the State delisting process will be initiated. Following delisting from the State ESA, wolves will have a classification as nongame wildlife under ORS 496.375.

Utah—If federally delisted, wolves in that portion of the NRM wolf DPS in Utah would remain listed as protected wildlife under State law. In Utah, wolves fall under three layers of protection: (1) State code, (2) Administrative Rule and (3) Species Management Plan. The Utah Code can be found at; *http://www.le.state.ut.us/~code/TITLE23/TITLE23.htm.*

The relevant administrative rules that restrict wolf take can be found at *http://www.rules.utah.gov/publicat/code/r657/r657–003.htm* and *http://www.rules.utah.gov/publicat/code/r657/r657–011.htm.* These regulations restrict all potential taking of wolves in Utah, including that portion in the NRM wolf DPS. Wolf management in Utah will have no effect on the recovered wolf population that resides in suitable habitat in Montana, Idaho, and Wyoming.

In 2003, the Utah Legislature passed House Joint Resolution 12 (HJR–12), which directed the Utah Division of Wildlife Resources (UDWR) to draft a wolf management plan for ''the review, modification and adoption by the Utah Wildlife Board, through the Regional Advisory Council process.'' In April 2003 the Utah Wildlife Board directed UDWR to develop a proposal for a wolf working group to assist the agency in this endeavor. The UDWR created the Wolf Working Group (WWG) in the summer of 2003. The WWG is composed of 13 members that represent diverse public interests regarding wolves in Utah.

On June 9, 2005, the Utah Wildlife Board passed the Utah Wolf Management Plan. The goal of the plan is to manage, study, and conserve wolves moving into Utah while avoiding conflicts with the elk and deer management objectives of the Ute Indian Tribe; minimizing livestock depredation; and protecting wild ungulate populations in Utah from excessive wolf predation. The Utah Wolf Management Plan can be viewed at *http://www.wildlife.utah.gov/wolf/.* Its purpose is to guide management of wolves in Utah during an interim period from Federal delisting until 2015, or until it is determined that wolves have become established in Utah, or the assumptions of the plan (political, social, biological, or legal) change. During this interim period, immigrating wolves will be studied to determine where they are most likely to settle without conflict.

Tribal Plans—There are about 20 tribes in this area. Currently no wolf packs live on, or are entirely dependent on, Tribal lands for their existence in the NRM wolf DPS. In the NRM wolf DPS about 12,719 mi^2 (32,942 km^2) (3 percent) of the area is Tribal land. In the NRM wolf occupied habitat, about 1,813 mi^2 (4,696 km^2) (2 percent) is Tribal land. 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 wolf DPS. Many wolf packs live in areas of public land where Tribes have various treaty rights, such as wildlife harvest. Montana, Idaho, and Wyoming 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 the Service could determine if 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). No other Tribe has submitted a wolf management plan. In November 2005, the Service requested information from all the Tribes in the tentative NRM wolf DPS regarding their Tribal regulations and any other relevant information regarding Tribal management or concerns about wolves. 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. The States are to control problem wolves in a manner similar to that used by the Service (1987, 1994, 1999, 2005) 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 will be more conservative.

Current Wyoming law provides a definition of pack that is not consistent with the Service's definition of breeding pair. In addition, Wyoming uses the State definition of pack in a complicated structure for determining when wolves are protected under the regulatory mechanisms of the ''trophy game'' status and the absent management structure under the ''predatory animal'' status. Wyoming's plan does not provide for regulatory control to balance wolf population size and distribution with livestock conflict and public tolerance.

If the wolf were delisted in the NRM DPS, the major difference between the previous Federal management and the new State management of problem wolves would be with respect to the taking of wolves in the act of attacking or molesting livestock or other domestic animals on private land by private landowners or on grazing allotments by permittees.

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, 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.

In contrast to the Service recovery program, currently approved State and tribal management programs are also to incorporate regulated public harvest, only when wolf populations in Wyoming, Montana, and Idaho are safely above recovery levels of 15 or more packs, to help manage wolf distribution and numbers to minimize conflicts with humans. Wyoming State law and management should also 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 will 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. Native ungulate populations also are maintained at high levels by Washington, Oregon, and Utah in the portions of those States that are in the tentative NRM wolf DPS. There is no foreseeable condition that would cause a decline in ungulate populations significant enough to affect a recovered wolf population.

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 NRM wolf DPS. We believe that the State management regulations that will go into effect if wolves in the NRM wolf DPS 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 NRM wolf DPS is extremely high. 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). 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 wolves will continue to maintain high genetic diversity in the NRM wolf DPS. However, should it become necessary

sometime in the distant future, all of the three core States' plans recognized 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 (Vonholdt *et al.* in prep.) 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 actions, but it is highly unlikely such management action would ever be required.

Summary of Our Five-Factor Analysis of Potential Threats

As required by the ESA, we considered the five potential threat factors to assess whether wolves are threatened or endangered throughout all or a significant portion of their range in the NRM wolf DPS and therefore, whether the NRM wolf DPS should be listed. In regard to the NRM wolf DPS, a significant portion of the wolf's range is an area that is important or necessary for maintaining a viable, self-sustaining, and evolving representative meta-population in order for the NRM wolf DPS to persist into the foreseeable future. While wolves historically occurred over most of the tentative DPS, large portions of this area are no longer able to support viable wolf populations, and the wolf population in the NRM wolf DPS will remain centered in northwestern Montana, central Idaho, and the GYA. There does not appear to be any significant portion of the range, except portions of Wyoming, where the NRM wolf DPS remains threatened or endangered.

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 wolf population in the NRM wolf DPS have been reduced or eliminated in all or a significant portion of its range in the foreseeable future. Unsuitable habitat and small, fragmented suitable habitat away from these core areas within the NRM wolf DPS, largely represent geographic locations where wolf packs cannot persist and are not significant to the species. Disease and natural predation do not threaten wolf population recovery in all or a 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 all or a significant portion of its range within the foreseeable future.

Managing take (*i.e.*, overutilization of wolves for commercial, recreational, scientific and educational purposes and human predation) 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 will maintain their share and distribution of the tri-State wolf population above recovery levels. Wolf management by the tribes and the States of Washington, Oregon, and Utah will be beneficial, but is not necessary to either achieving or maintaining a recovered wolf population in the NRM wolf DPS.

If Wyoming had an approved State law and wolf management plan, we believe that regulation by States and Tribes of human-caused mortality would be adequate to maintain the wolf population in the NRM wolf DPS above recovery levels in all significant portions of its range for the foreseeable future. Therefore, on the basis of the best scientific and commercial information available, we believe that the gray wolf in the NRM DPS would no longer qualify for protection under the ESA, if Wyoming modified its State wolf law and State wolf management plan in a manner that the Service would approve as an adequate regulatory mechanism.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the ESA include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The ESA provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. Most of these measures have already been successfully applied to gray wolves in the conterminous 48 States.

We intend to propose rulemaking to remove the protections of the ESA from all or parts of six States, but do not intend to take action until Wyoming's law and wolf management plan are modified and can be approved by the Service. If Wyoming modified its regulatory framework for wolf management in a manner that the Service could approve and if the Service proposed and delisted the NRM wolf in the NRM DPS, the protections of the ESA would still continue to apply to the gray wolves outside the NRM wolf DPS. We do not intend to modify or withdraw the existing special regulations or the nonessential experimental population designations for the reintroduced gray wolf populations in Arizona, New Mexico, and Texas. Where wolves exist outside the NRM wolf DPS, they would continue to be considered during consultations with other Federal agencies under section 7 of the ESA. Should a NRM gray wolf disperse beyond the boundaries of the NRM DPS, it would acquire the status of wolves in the area it enters. For example, if wolves in the NRM DPS were delisted, a wolf that dispersed from Wyoming into Colorado would take on endangered species status under the ESA.

This notice does not apply to the listing or protection of the red wolf (*Canis rufus*).

Post-Delisting Monitoring

Section 4(g)(1) of the ESA, added in the 1988 reauthorization, requires us to implement a system, in cooperation with the States, to monitor for not less than 5 years, the status of all species that have recovered and been removed from the Lists of Endangered and Threatened Wildlife and Plants (50 CFR 17.11 and 17.12). The purpose of this post-delisting monitoring (PDM) is to verify that a recovered species remains secure from risk of extinction after it no longer has the protections of the ESA. Should relisting be required, we may make use of the emergency listing authorities under section 4(b)(7) of the ESA to prevent a significant risk to the well-being of any recovered species. Section 4(g) of the ESA explicitly requires cooperation with the States in development and implementation of PDM programs, but we remain

responsible for compliance with section 4(g) and, therefore, must remain actively engaged in all phases of PDM.

Monitoring Techniques—The NRM area was intensively monitored for wolves even before wolves were documented in Montana (Weaver 1978; Ream and Mattson 1982; Kaminski and Hansen 1984). Numerous Federal, State, Tribal agencies, universities, and special interest groups assisted in those various efforts. Since 1979, wolves have been monitored using standard techniques including collecting, evaluating, and following-up on suspected observations of wolves or wolf signs by natural resource agencies or the public; howling or snow tracking surveys conducted by the Service, our university and agency cooperators, volunteers, or interested special interest groups; and by capturing, radio-collaring and monitoring wolves. We only consider wolves and wolf packs as confirmed when Federal, State, or Tribal agency verification is made by field staff that can reliably identify wolves and wolf signs. We provide an annual estimate of the number of individuals, wolf packs, and breeding pairs of wolves in the NRM wolf DPS. For example, by the end of 2004, we estimated there were 835 wolves in 110 packs and that 66 of those packs met the criteria for a breeding pair in Montana, Idaho, and Wyoming; no wolves were known to be present in any of the adjacent States (Service *et al.* 2005).

The wolf monitoring system works in a hierarchical nature. Typically we receive a report (either directly or passed along by another agency) that wolves or their signs were observed. We make no judgment whether the report seems credible or not and normally just note the general location of that observation. Unless breeding results, reports of single animals are not important unless tied to other reports or unusual observations that elicit concern (*i.e.*, a wolf reported feeding on a livestock carcass). Lone wolves can wander long distances over a short period of time (Mech and Boitani 2003) and are almost impossible to find again and confirm. However, the patterns and clusters of those individual reports are very informative and critical to subsequent agency decisions about where to focus agency searches for wolf pack activity. When we receive multiple reports of multiple individuals that indicate possible territoriality and pair bonding (the early stage of pack formation), or a report of multiple wolves that seems highly credible (usually made by a biologist or experienced outdoors-person), we typically notify the nearest Federal, State or Tribal natural resource/land management agency and ask them to be on the alert for possible wolf activity during their normal course of field activities. Once they locate areas of suspected wolf activity, we may ask experienced field biologists to search the area for wolf signs (tracks, howling, scats, ungulate kills). Depending on the type of activity confirmed, field crews may decide to capture, radio-collar, and release wolves on site. Radio-collared wolves are then relocated from the air 1 to 4 times per month dependent on a host of factors including funding, personnel, aircraft availability, weather, and other priorities. At the end of the year, we compile agency-confirmed wolf observations to estimate the numbers and locations of adult wolves and pups that were likely alive on December 31 of that year. These data are then summarized by packs to indicate overall population size, composition, and distribution. This is a very intensive level of wildlife population monitoring compared to nearly all others done in North America that we believe results in relatively accurate estimates of wolf population distribution and structure (Service *et al.* 2005) in the NRM wolf DPS. This monitoring strategy has been used to estimate the NRM wolf population for over 20 years.

Montana, Idaho, and Wyoming as well as Oregon and Utah committed to continue monitoring of wolf populations, according to their State wolf management plans (See State plans in Factor D), using similar techniques as the Service and its cooperators (which has included the States, Tribes, and USDA-Wildlife Services—the same agencies that will be managing and monitoring wolves post-delisting) have used. The States have committed to continue to conduct wolf population monitoring through the mandatory 5-year PDM period that is required by the ESA. The States also have committed to publish the results of their monitoring efforts in annual wolf reports just as has been done since 1989 by the Service and its cooperators (Service *et al.* 1989–2005). Other States and Tribes within the DPS adjacent to Montana, Idaho, and Wyoming also have participated in this interagency cooperative wolf monitoring system for at least the past decade and their plans commit them to continue to report wolf activity in their States and coordinate those observations with other States.

Service Review of the Post-Delisting Status of the Wolf Population—To ascertain wolf population distribution and structure and analyze if the wolf population might require a status review to determine whether it should again be listed under the ESA, we intend to review the State and any Tribal annual wolf reports each year. By evaluating the techniques used, and the results of those wolf monitoring efforts, the Service can decide whether further action, including re-listing is warranted. In addition, the States and Tribes are investigating other, perhaps more accurate and less expensive ways to estimate and describe wolf pack distribution and abundance (Service *et al.* 2005; Sime *et al.* in prep.; Kunkel *et al.* in prep.). Data indicate that other survey methods and data can become the ''biological equivalents'' of the breeding pair definition currently used to measure recovery. Montana and Idaho have committed to use a definition of a wolf pack that approximates the current breeding pair standard (such as five or six wolves traveling together in winter). Wyoming law defines a wolf pack as simply five or more wolves traveling together, which could mean only a female and four pups in May and would have no relationship to a breeding pair. Those State and Tribal investigations also include alternative ways to estimate the status of the wolf population and the numbers of breeding pairs that are as accurate, but less expensive, than those that are currently used. The States will continue to cooperate with National Parks and Tribes and publish their annual wolf population estimates after the 5-year mandatory wolf population monitoring required by the ESA is over, but this will not be required by the ESA.

We fully recognize and anticipate that State and Tribal laws regarding wolves and State and Tribal management will change through time as new knowledge becomes available as the States and Tribes gain additional experience at wolf management and conservation. We will base any analysis of whether a status review and relisting are warranted upon the best scientific and commercial data available regarding wolf distribution and abundance in the NRM wolf DPS. For the 5-year PDM period, the best source of that information will be the State annual wolf reports. We intend to post those annual State wolf reports and our annual review and comment on the status of the wolf population in the NRM wolf DPS on our Web site by April 1 of each year. During our yearly analysis for PDM (at least 5 years) of the State's annual reports we also intend to comment on any threats that may have increased during the previous year, such as significant changes in a State regulatory framework, diseases, decreases in prey abundance, increases

in wolf-livestock conflict, or other factors.

Our analysis and response for PDM is to track changes in wolf abundance and distribution and threats to the population. If the wolf population ever falls below the minimum NRM wolf population recovery level (30 breeding pairs of wolves and 300 wolves in Montana, Idaho, and Wyoming), we could initiate an emergency listing of gray wolves throughout the NRM wolf DPS. If the wolf population segment in Montana, Idaho, or Wyoming fell below 10 breeding pairs or 100 wolves in any one of those States for 2 consecutive years, we could initiate a status review and analysis of threats to determine if re-listing was warranted. All such reviews would be made available for public review and comment, including peer review by select species experts. If either of these two scenarios occurred (1) less than 30 breeding pairs or 300 wolves, or (2) less than 10 breeding pairs or 100 wolves in Montana, Idaho, or Wyoming for 2 consecutive years during the mandatory PDM period), the PDM period would be extended 5 additional years from the point of violation.

Public Comments Solicited

We solicit comments or suggestions from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party concerning this notice. Generally, we seek information, data, and comments concerning the boundaries of the tentative NRM wolf DPS and the status of gray wolf in the NRM. Specifically, we seek documented, biological data on the status of the NRM wolf population and their habitat, and the management of these wolves and their habitat.

We will also consider the possibility of establishing a Northern Rocky Mountain DPS for the gray wolf, but listing the DPS as threatened, if we determine after considering public comments that the population segment meets the criteria in the DPS Policy, but the DPS does not meet the delisting tests in the ESA and our regulations. This is a possible outcome if Wyoming does not adopt a State law and management plan that are sufficient to support delisting. We request public comments on this alternative.

Idaho and Montana have requested that we establish a DPS that excludes Wyoming if Wyoming fails to adopt an appropriate State law and a management plan that would support delisting. An alternative to this proposal would be to include Yellowstone National Park, where exclusive Federal jurisdiction lies and neither State law nor exploitation of wildlife would occur in any event, but to exclude the rest of Wyoming from the DPS. The Idaho and Montana request is inconsistent with the available science discussed earlier in this preamble as it applies to the requirements for establishment of a DPS. Nevertheless, if anyone now advocates such an approach, we request that they address both the scientific and legal basis for it in their comments. We would consider these alternative scenarios to the extent Wyoming does not act and we find such actions to be legally sufficient.

The eastern one third of Washington and Oregon, and a small portion of northern Utah are included within the tentative DPS. We request comments on whether the DPS should be expanded to include more or less land within Utah or any other State. Any such comments should provide relevant scientific data. We will consider the information so submitted in delineating the boundaries for this DPS.

Submit comments as indicated under **ADDRESSES.** If you wish to submit comments by e-mail, please avoid the use of special characters and any form of encryption. Please also include your name and return address in your e-mail message.

Our practice is to make comments, including names and home addresses of respondents, available for public review during regular business hours. Individual respondents may request that we withhold their home address from the rulemaking record, which we will honor to the extent allowable by law. There also may be circumstances in which we would withhold from the record a respondent's identity, as allowable by law. If you wish us to withhold your name or address, you must state this prominently at the beginning of your comment. However, we will not consider anonymous comments. We will make all submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, available for public inspection in their entirety. Comments and other information received, as well as supporting information used to write this rule, will be available for public inspection, by appointment, during normal business hours at our Helena Office (see **ADDRESSES**). In making a final decision on this notice, we will take into consideration the comments and any additional information we receive. Such communications may lead to a proposed rule that differs from this notice.

References Cited

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

Dated: January 31, 2006.

H. Dale Hall,

Director, U.S. Fish and Wildlife Service.

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