§ 17.40 [Amended]

■ 3. Amend § 17.40 by removing and reserving paragraph (d).

§ 17.95 [Amended]

■ 4. Amend § 17.95(a) by removing the critical habitat entry for ''Gray Wolf (*Canis lupus*).''

Dated: March 10, 2009.

Rowan W. Gould,

Acting Director, U.S. Fish and Wildlife Service.

[FR Doc. E9–5981 Filed 4–1–09; 8:45 am]

BILLING CODE 4310–55–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[FWS–R6–ES–2008–0008; 92220–1113–0000; ABC Code: C6]

RIN 1018–AW37

Endangered and Threatened Wildlife and Plants; Final Rule To Identify the Northern Rocky Mountain Population of Gray Wolf as a Distinct Population Segment and To Revise the List of Endangered and Threatened Wildlife

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: Under the authority of the Endangered Species Act of 1973, as amended (Act), we, the U.S. Fish and Wildlife Service (Service), identify a distinct population segment (DPS) of the gray wolf (*Canis lupus*) in the Northern Rocky Mountains (NRM) of the United States and revise the List of Endangered and Threatened Wildlife by removing gray wolves within NRM DPS boundaries, except in Wyoming. The NRM gray wolf DPS encompasses the eastern one-third of Washington and Oregon, a small part of north-central Utah, and all of Montana, Idaho, and Wyoming. Our current estimate for 2008 indicates the NRM DPS contains approximately 1,639 wolves (491 in Montana; 846 in Idaho; 302 in Wyoming) in 95 breeding pairs (34 in Montana; 39 in Idaho; 22 in Wyoming). These numbers are about 5 times higher than the minimum population recovery goal and 3 times higher than the minimum breeding pair recovery goal. The end of 2008 will mark the ninth consecutive year the population has exceeded our numeric and distributional recovery goals.

The States of Montana and Idaho have adopted State laws, management plans, and regulations that meet the requirements of the Act and will conserve a recovered wolf population into the foreseeable future. In our proposed rule (72 FR 6106, February 8, 2007), we noted that removing the Act's protections in Wyoming was dependant upon the State's wolf law (W.S. 11–6–302 *et seq.* and 23–1–101, *et seq.* in House Bill 0213) and wolf management plan adequately conserving Wyoming's portion of a recovered NRM wolf population. In light of the July 18, 2008, U.S. District Court order, we reexamined Wyoming law, its management plans and implementing regulations, and now determine they are not adequate regulatory mechanisms for the purposes of the Act.

We determine that the best scientific and commercial data available demonstrates that (1) the NRM DPS is not threatened or endangered throughout ''all'' of its range (i.e., not threatened or endangered throughout all of the DPS); and (2) the Wyoming portion of the range represents a significant portion of range where the species remains in danger of extinction because of inadequate regulatory mechanisms. Thus, this final rule removes the Act's protections throughout the NRM DPS except for Wyoming. Wolves in Wyoming will continue to be regulated as a non-essential, experimental population per 50 CFR 17.84(i) and (n).

DATES: This rule becomes effective on May 4, 2009.

ADDRESSES: This final rule is available on the Internet at *http://www.regulations.gov*. Comments and materials received, as well as supporting documentation used in preparation of this final rule, are available for inspection, by appointment, during normal business hours, at our Montana office, 585 Shepard Way, Helena, Montana 59601. Call (406) 449–5225, extension 204 to make arrangements.

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. Individuals who are hearing-impaired or speech-impaired may call the Federal Relay Service at 1–800–877–8337 for TTY assistance.

SUPPLEMENTARY INFORMATION:

Background

Gray wolves (*C. lupus*) are the largest wild members of the dog family (Canidae). Adult gray wolves range from 18–80 kilograms (kg) (40–175 pounds (lb)) depending upon sex and region (Mech 1974, p. 1). In the NRM, adult male gray wolves average over 45 kg (100 lb), but may weigh up to 60 kg (130 lb). 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.* 2002, p. 821).

Gray wolves have a circumpolar range including North America, Europe, and Asia. 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, pp. 31–34; 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, p. 414).

Wolves primarily prey on medium and large mammals. Wolves normally live in packs of 2 to 12 animals. 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) (Smith *et al.* 2006, p. 243; Service *et al.* 2008, Tables 1–3). Packs typically occupy large distinct territories from 518 to 1,295 square kilometers (km^2) (200 to 500 square miles (mi^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, intra-species conflict, other forms of mortality, and dispersal. Dispersing wolves may cover large areas (*See* Defining the Boundaries of the NRM DPS) as they try to join other packs or attempt to form their own pack in unoccupied habitat (Mech and Boitani 2003, pp. 11–17).

Typically, only the top-ranking (''alpha'') male and female in each pack breed and produce pups (Packard 2003, p. 38; Smith *et al.* 2006, pp. 243–4; Service *et al.* 2008, Tables 1–3). 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 *et al.* 1989–2007, Tables 1–3). Most years, four of these five pups survive until winter (Service *et al.* 1989–2008, Tables 1–3). Wolves can live 13 years (Holyan *et al.* 2005, p. 446), but the average lifespan in the NRM is less than 4 years (Smith *et al.* 2006, p. 245). Pup production and survival can increase when wolf density is lower and food availability per wolf increases (Fuller *et al.* 2003, p. 186). Pack social structure is very adaptable and resilient. Breeding members can be

quickly replaced either from within or outside the pack and pups can be reared by another pack member should their parents die (Packard 2003, p. 38; Brainerd *et al.* 2008; Mech 2006, p. 1482). 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, pp. 181–183; Service *et al.* 2008, Table 4).

For detailed information on the biology of this species see the ''Biology and Ecology of Gray Wolves'' section of 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 U.S. (2003 Reclassification Rule) (68 FR 15804).

Previous Federal Actions

In 1974, we listed two subspecies of gray wolf as endangered: The NRM gray wolf (*C. l. irremotus*) and the eastern timber wolf (*C. l. lycaon*) in the Great Lakes region (39 FR 1171, January 4, 1974). We listed a third gray wolf subspecies, the Mexican wolf (*C. l. baileyi*) as endangered on April 28, 1976, (41 FR 17740) in Mexico and the southwestern U.S. On June 14, 1976 (41 FR 24064), we listed the Texas gray wolf subspecies (*C. l. monstrabilis*) as endangered in Texas and Mexico.

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, we designated critical habitat in Minnesota and Isle Royale, Michigan. In the NRM, we completed a recovery plan in 1980 and revised in 1987. In the Great Lakes Region, we completed a recovery plan in 1978 and revised in 1992. In the Southwest, we completed a recovery plan in 1982.

On November 22, 1994, we designated portions of Idaho, Montana, and Wyoming as two nonessential experimental population areas for the gray wolf under section 10(j) of the Act, including the Yellowstone Experimental Population Area (59 FR 60252, November 22, 1994) and the Central Idaho Experimental Population Area (59 FR 60266, November 22, 1994). These designations assisted us in initiating gray wolf reintroduction projects in central Idaho and in the Greater Yellowstone Area (GYA). In 2005 and 2008, we revised these regulations to provide increased management flexibility for this recovered wolf population in States with Service-approved post-delisting wolf management plans (70 FR 1286, January 6, 2005; 73 FR 4720, January 28, 2008; 50 CFR 17.84(n)).

The NRM wolf population achieved its numerical and distributional recovery goals at the end of 2000 (Service *et al.* 2008, Table 4). The temporal portion of the recovery goal was achieved in 2002 when the numerical and distributional recovery goals were exceeded for the 3rd successive year (Service *et al.* 2008, Table 4). To meet the Act's requirements Idaho, Montana, and Wyoming needed to develop post-delisting wolf management plans to ensure that adequate regulatory mechanisms would exist should the Act's protections be removed. In 2004, we determined that Montana's and Idaho's laws and wolf management plans were adequate to assure that their shares of the NRM wolf population would be maintained above recovery levels. However, we found the 2003 Wyoming legislation and plan inadequate to conserve Wyoming's share of a recovered NRM gray wolf population (Williams 2004). Wyoming challenged this determination but the Federal district court in Wyoming dismissed the case (360 F. Supp 2nd 1214, D. Wyoming 2005). Wyoming appealed that decision and on April 3, 2006, the Tenth Circuit Court of Appeals upheld the district court ruling (442 F. 3rd 1262).

On July 19, 2005, we received a petition from the Office of the Governor, State of Wyoming and the Wyoming Game and Fish Commission (WGFC) to revise the listing status for the gray wolf by recognizing a NRM DPS and to remove it from the Federal List of Endangered and Threatened Species (Freudenthal 2005). On August 1, 2006, we announced a 12-month finding that the petitioned action (delisting in all of Montana, Idaho, and Wyoming) was not warranted because the 2003 Wyoming State law and wolf management plan did not provide the necessary regulatory mechanisms to ensure that Wyoming's numerical and distributional share of a recovered NRM wolf population would be conserved (71 FR 43410). Wyoming challenged this finding in Federal District Court. On February 27, 2008, Federal District Judge issued an order dismissing the case (Wyoming U.S. District Court Case Number 2:06–CV–00245).

On February 8, 2007, we proposed to identify the NRM DPS of the gray wolf and to delist all or most portions of the NRM DPS (72 FR 6106). Specifically, we proposed to delist wolves in Montana, Idaho, and Wyoming, and parts of Washington, Oregon, and Utah. The proposal noted that the Act's protections would be retained in significant portions of the range in Wyoming in the final rule if adequate regulatory mechanisms were not developed to conserve Wyoming's portion of a recovered wolf population into the foreseeable future. Under this scenario, wolves in portions of Wyoming would continue to be regulated under the Act as a non-essential, experimental population per 50 CFR 17.84(i) and (n).

On July 6, 2007, the Service extended the comment period in order to consider a 2007 revised Wyoming wolf management plan and State law that we believed, if implemented, could allow the wolves in all of Wyoming to be removed from the List of Endangered and Threatened Wildlife (72 FR 36939). On November 16, 2007, the WGFC unanimously approved the 2007 Wyoming Plan (Cleveland 2007, p. 1). We then determined this plan provided adequate regulatory protections to conserve Wyoming's portion of a recovered wolf population into the foreseeable future (Hall 2007, p. 2). On February 27, 2008, we issued a final rule recognizing the NRM DPS and removing all of this DPS from the List of Endangered and Threatened Wildlife (73 FR 10514). This rule determined that Wyoming's regulatory mechanisms were adequate.

On April 28, 2008, 12 parties filed a lawsuit challenging the identification and delisting of the NRM DPS. The plaintiffs also moved to preliminarily enjoin the delisting. On July 18, 2008, the U.S. District Court for the District of Montana granted the plaintiffs' motion for a preliminary injunction and enjoined the Service's implementation of the final delisting rule for the NRM DPS of the gray wolf. The court stated that we acted arbitrarily in delisting a wolf population that lacked evidence of genetic exchange between subpopulations. The court also stated that we acted arbitrarily and capriciously when we approved Wyoming's 2007 statute and wolf management plan because the State failed to commit to managing for at least 15 breeding pairs and Wyoming's 2007 statute allowed the WGFC to diminish the trophy game area if it ''determines the diminution does not impede the delisting of gray wolves and will facilitate Wyoming's management of wolves.'' The court's preliminary injunction order concluded that the Plaintiffs were likely to prevail on the

merits of their claims. In light of the district court order, on September 22, 2008, we asked the court to vacate the final rule and remand it to us. On October 14, 2008, the court vacated the final delisting rule and remanded it back to the Service for further consideration.

Similarly, on February 8, 2007, we recognized a Western Great Lakes (WGL) DPS and removed it from the list of the List of Endangered and Threatened Wildlife (72 FR 6052). Several groups challenged this rule in court, arguing that the Service may not identify a DPS within a broader pre-existing listed entity for the purpose of delisting the DPS (*Humane Society of the United States* v. *Kempthorne*, Civil Action No. 07–0677 (PLF) (D.D.C.)). On September 29, 2008, the court vacated the WGL DPS final rule and remanded it to the Service. The court found that the Service had made that decision based on its interpretation that the plain meaning of the Act authorizes the Service to create and delist a DPS within an already-listed entity. The court disagreed, and concluded that the Act is ambiguous as to whether the Service has this authority. The court accordingly remanded the final rule so that the Service can provide a reasoned explanation of how its interpretation is consistent with the text, structure, legislative history, judicial interpretations, and policy objectives of the Act.

Given the above court rulings, on October 28, 2008 (73 FR 63926), we reopened the comment period on our February 8, 2007, proposed rule (72 FR 6106). Specifically, we sought information, data, and comments from the public regarding the 2007 proposal with an emphasis on new information relevant to this action, the issues raised by the Montana District Court, and the issues raised by the September 29, 2008, ruling of the U.S. District Court for the District of Columbia with respect to the WGL gray wolf DPS. The notice also asked for public comment on what portions of Wyoming need to be managed as a trophy game area and what portions of Wyoming constitute a significant portion of the NRM DPS's range. After further analysis, we determined that Wyoming's regulatory framework did not meet the requirements of the Act. On January 15, 2009 Wyoming's Governor was notified that Wyoming no longer had a Service-approved wolf management plan (Gould 2009). Wolf management in all of Wyoming (except the Wind River Tribal Lands because the tribe had a Service-approved plan) again became immediately under the less flexible provisions of the 1994 experimental population rules [17.84 (i)].

We are required to rely upon the best scientific information currently available. Therefore, this final rule reflects new data and information primarily concerning wolf population numbers, livestock depredations and wolf control, and genetic exchange that were received after the 2008 public comment period. This new data and information are consistent with and did not change our conclusions stated in the preamble to the proposed rule and in the notice for the reopened comment period.

For detailed information on previous Federal actions also see the 2003 Reclassification Rule (68 FR 15804, April 1, 2003), the Advanced Notice of Proposed Rulemaking (ANPR) (71 FR 6634, February 8, 2006), the 12-month finding on Wyoming's petition to delist (71 FR 43410, August 1, 2006), and the February 8, 2007, proposed rule to designate the NRM population of gray wolf as a DPS and remove this DPS from the List of Endangered and Threatened Wildlife (72 FR 6106).

Distinct Vertebrate Population Segment Policy Overview

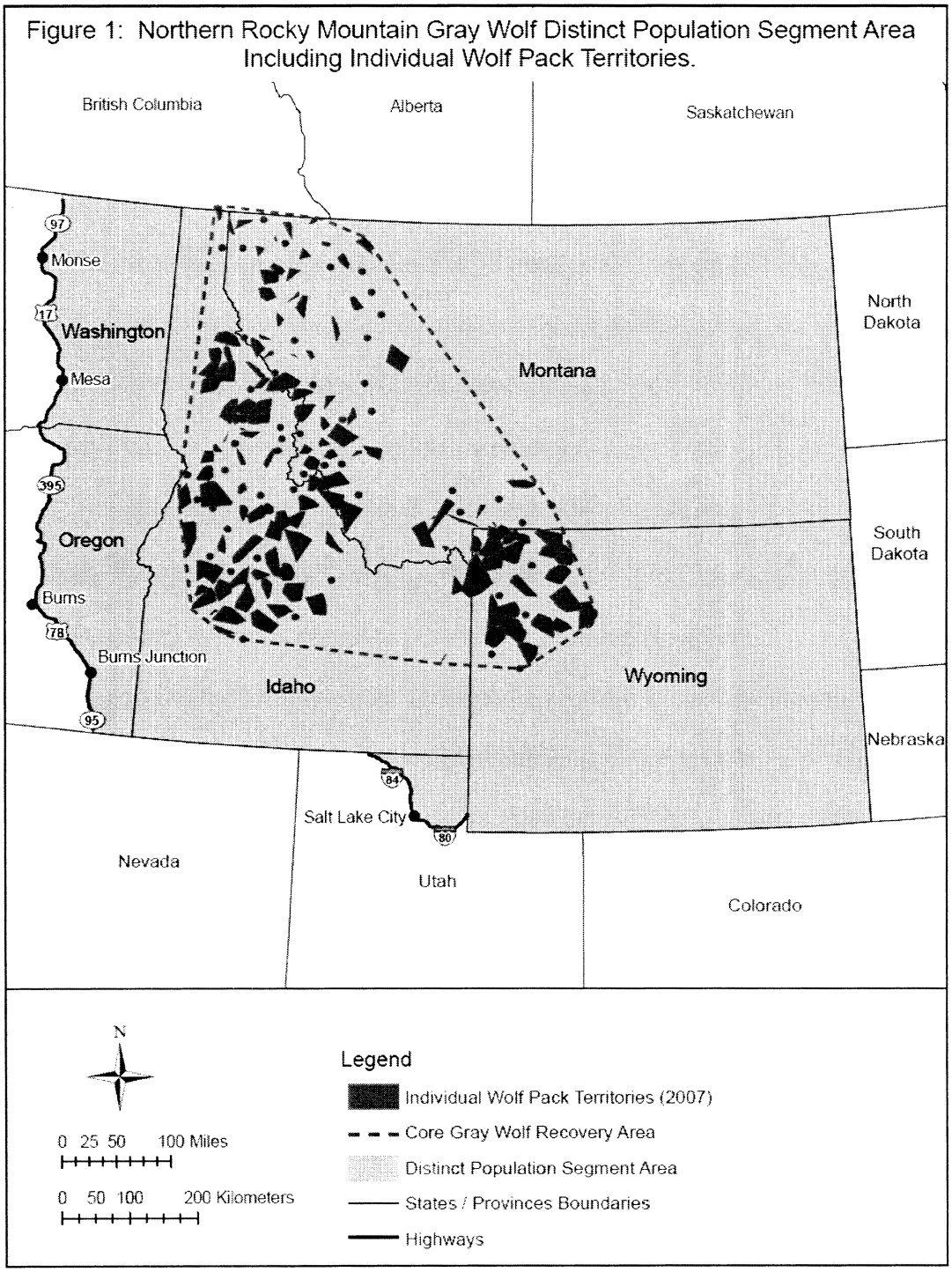
Pursuant to the Act, we consider if information is sufficient to indicate that listing, reclassifying, or delisting any species, subspecies, or, for vertebrates, any DPS of these taxa may be warranted. To interpret and implement the DPS provision of the Act and congressional guidance, the Service and the National Marine Fisheries Service published a policy regarding the recognition of distinct vertebrate population segments under the Act (61 FR 4722, February 7, 1996). Under this policy, the Service considers two factors to determine whether the population segment is a valid DPS—(1) discreteness of the population segment in relation to the remainder of the taxon, and (2) the significance of the population segment to the taxon to which it belongs. If a population meets both tests, it is a DPS, and the Service then evaluates the population segment's conservation status according to the standards in section 4 of the Act for listing, delisting, or reclassification (i.e., is the DPS endangered or threatened).

Defining the Boundaries of the NRM DPS

We defined the geographic boundaries for the area to be evaluated for DPS status based on discreteness and significance as defined by our DPS policy. The DPS policy allows an artificial (e.g., State line) or manmade (e.g., road or highway) boundary to be used as a boundary of convenience for clearly identifying the geographic area for a DPS. The NRM DPS includes all of Montana, Idaho, and Wyoming, the eastern third of Washington and Oregon, and a small part of north central Utah. 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 centers of these roads are deemed the boundary of the DPS (See Figure 1).

This DPS is consistent with over 30 years of recovery efforts in the NRMs in that: (1) The DPS approximates the U.S. historic range of the NRM gray wolf subspecies (*C. l. irremotus*) (Service 1980, p. 3; Service 1987, p. 2) which was the originally listed entity in 1974 (39 FR 1171, January 4, 1974); (2) the DPS boundaries are inclusive of the areas focused on by both NRM recovery plans (Service 1980, pp. 7–8; Service 1987, p. 23) and the 1994 environmental impact statement (EIS) (Service 1994, Ch. 1 p. 3); and (3) the DPS is inclusive of the entire Central-Idaho and Yellowstone Non-essential Experimental Population areas (59 FR 60252, November 22, 1994; 59 FR 60266, November 22, 1994; 50 CFR 17.84 (i) & (n)).

BILLING CODE 4310–55–P



One factor we considered in defining the boundaries of the NRM DPS was the current distribution of known wolf packs in 2007 (Service *et al.* 2008, Figure 1) (except four packs in northwestern Wyoming that did not persist). We also examined the annual distribution of wolf packs from 2002 (the first year the population exceeded the recovery goal) through 2008 (Service *et al.* 2003–2009, Figure 1; Bangs *et al.* in press). Because outer distribution changed little in these years, we used the 2004 data because it had already been analyzed in the February 8, 2006 ANPR (71 FR 6634).

Dispersal distances also played a key role in determining the boundaries for the DPS. We examined the known dispersal distances of over 200 marked dispersing wolves from the NRM from 1993 through 2005 (Boyd *et al.* 2007; Jimenez *et al.* 2008d). These data indicate that the average dispersal distance of wolves from the NRM was about 97 km (60 mi) (Boyd and Pletscher 1999, p. 1094; Boyd *et al.* 2007; Thiessen 2007, p. 33; Jimenez *et al.* 2008d). We determined that 290 km (180 mi), three times the average dispersal distance, was a breakpoint in our data for unusually long-distance dispersal out from existing wolf pack territories (Jimenez *et al.* 2008, Figures 2 and 3). Only 11 wolves (none of which subsequently bred) have dispersed

farther outside the core population areas and remained in the U.S. None of these wolves returned to the core population in Montana, Idaho, or Wyoming. Only dispersal from the NRM packs to areas within the U.S. was considered in these calculations because we were trying to determine the appropriate DPS boundaries within the U.S. Dispersers to Canada were not considered in our calculation of average dispersal difference because the distribution of suitable habitat and level of human persecution in Canada is significantly different than in the U.S., potentially affecting wolf dispersal patterns. We plotted average dispersal distance and three times the average dispersal distance from existing wolf pack territories in the NRM. The resulting map indicated a wide area where wolf dispersal was common enough to support intermittent additional pack establishment from the core wolf population given the availability of patches 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, pp. 13–16).

We also examined suitable wolf habitat in Montana, Idaho, and Wyoming (Oakleaf *et al.* 2005, pp. 555–558) and throughout the western U.S. (Carroll *et al.* 2003, p. 538; Carroll *et al.* 2006, pp. 27–30) 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.* 2005, p. 559; Carroll *et al.* 2003, p. 541; Carroll *et al.* 2006, p. 32) were similar in many respects. Suitable wolf habitat in the NRM 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 (*Ovis sp.*), low agricultural use, and low human populations (*see* Factor A). The models indicate that a large block of suitable wolf habitat exists in central Idaho and the GYA, and to a smaller extent in 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 and are consistent with the actual distribution of all wolf breeding pairs in the NRM since 1986 (Bangs *et al.* 1998, Figure 1; Service *et al.* 1999–2009, Figures 1–4, Tables 1–3). The models indicate little habitat is suitable for pack persistence within the portion of the NRM DPS in eastern Montana, southern Idaho, eastern Wyoming, Washington, Oregon, or northcentral Utah although dispersing wolves may utilize these areas (See Factor A).

Unsuitable habitat also was important in determining the boundaries of our DPS. Model predictions by Oakleaf *et al.* (2006, p. 559) and Carroll *et al.* (2003, pp. 540–541; 2006, p. 27) and our observations during the past 20 years (Bangs *et al.* 2004, p. 93; Service *et al.* 2008, Figures 1–4, Table 4) indicate that non-forested rangeland and croplands associated with intensive agricultural use (prairie and high desert) preclude wolf pack establishment and persistence. This unsuitability is due to high rates of wolf mortality, high densities of livestock compared to wild ungulates, chronic conflict with livestock and pets, local cultural intolerance of large predators, and wolf behavioral characteristics that make them 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 broad boundary separating the NRM 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 western U.S.

We included the eastern parts of Washington and Oregon and a small portion of north central Utah within the NRM DPS, because—(1) these areas are within 97 to 300 km (60 to 190 mi) from the core wolf population where dispersal is likely; (2) lone dispersing wolves have been documented in these areas more than once in recent times (Boyd *et al.* 2007; Jimenez *et al.* 2008d); (3) these areas contain some suitable habitat (*see* Factor A); (4) the potential for connectivity exists between the relatively small and fragmented patches of suitable habitat in these areas with larger blocks of suitable habitat in the NRM DPS; and (5) most of the area lies within the historic range of the NRM gray wolf subspecies (*C. l. irremotus*) (Service 1980, p. 3; Service 1987, p. 2) originally listed under the Act in 1974 (39 FR 1171, January 4, 1974). If wolf breeding pairs establish in these areas, habitat suitability models indicate these nearby areas would likely 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 potentially suitable habitat farther beyond the NRM DPS boundary. As noted earlier, large swaths of unsuitable habitat would isolate any wolf breeding pairs within the DPS from other large patches of suitable habitat to the west or south (Carroll *et al.* 2003, p. 541).

Although we have received reports of individual and wolf packs in the North Cascades of Washington (Almack and Fitkin 1998, pp. 7–13), agency efforts to confirm them have been unsuccessful and to date no individual wolves or packs have been confirmed there (Boyd and Pletscher 1999, p. 1096; Boyd *et al.* 2007). However, a wolf pack (2 adults and 6 pups) was discovered near Twisp, Washington (just east of the North Cascades), in July 2008. Their territory is west of the NRM DPS boundary. Genetic analysis indicated the two adults did not come from the wolf population in the NRM DPS. Instead, they likely originated from southcentral British Columbia (Allen 2008). This confirms the appropriateness of our western DPS boundary and our conclusion that intervening unsuitable habitat makes it unlikely that wolves have or will disperse between the North Cascades and the NRM population. However, if additional wolves disperse into the North Cascades, they will remain protected by the Act as endangered because it is outside of the NRM DPS.

We include all of Wyoming, Montana, and Idaho in the NRM DPS because (1) their State regulatory frameworks apply Statewide; and (2) expanding the DPS beyond a 300 km (190 mi) band of likely dispersal distances to include extreme eastern Montana and Wyoming adds only areas unsuitable habitat for pack persistence and does not effect the distinctness of the NRM DPS. DPS boundaries that include all of Wyoming, Montana, and Idaho are also consistent with the 1994 designations of the Central-Idaho and Yellowstone Non-essential Experimental Population areas (59 FR 60252, November 22, 1994; 59 FR 60266, November 22, 1994; 50 CFR 17.84 (i) & (n)). Although including all of Wyoming in the NRM DPS results in including portions of the Sierra Madre, the Snowy, and the Laramie Ranges, we do not consider these areas to be suitable wolf habitat for pack persistence because of their size, shape, and distance from a strong source of dispersing wolves. Oakleaf *et al.* (2006, pp. 558–559; Oakleaf 2006) chose not to analyze these areas of southeast Wyoming because they are fairly intensively used by livestock and are surrounded with, and interspersed by, private land, making pack establishment and persistence unlikely. While Carroll *et al.* (2003, p. 541; 2006, p. 32) optimistically predicted these areas

were suitable habitat, the model predicted that under current conditions these areas were largely sink habitat (i.e., a habitat in which the species' mortality exceeds reproductive success) and that by 2025 (within the foreseeable future) they were likely to be ranked as low occupancy because of human population growth and road development.

We chose not to extend the NRM DPS boundary east beyond Montana and Wyoming, because those adjacent portions of North Dakota, South Dakota, and Nebraska are far outside the predicted routine dispersal range of NRM wolves. Given the available information on potentially suitable habitat, expansion of the DPS to include Colorado or larger portions of Utah to the south and west would have included large areas of potentially suitable but unoccupied habitat in those States (Carroll *et al.* 2003, p. 541). Given the current distribution of the NRM wolf population to suitable habitat, we concluded that a smaller DPS containing occupied suitable habitat, the adjacent areas of largely unsuitable habitat where routine wolf dispersal could be expected, and that was distinct from other large contiguous blocks of potentially suitable habitat to the west and south was more biologically appropriate. This DPS is also reflective of areas of recovery focus over the last 30 years (39 FR 1171, January 4, 1974; Service 1980; Service 1987; Service 1994; 59 FR 60252, November 22, 1994; 59 FR 60266, November 22, 1994; 50 CFR 17.84 (i) & (n)).

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 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 Act.

Markedly Separated from Other Populations of the Taxon—The eastern edge of the NRM DPS (Figure 1) is about 644 km (400 mi) from the western edge of the area currently occupied by the WGL wolf population (eastern Minnesota) and is separated from it by hundreds of miles of unsuitable habitat (see Factor A). The southern edge of the NRM DPS boundary is about 724 km (450 mi) from the nonessential experimental populations of wolves in the southwestern U.S. with vast amounts of unoccupied marginal or unsuitable habitat separating them. While one dispersing wolf was confirmed east and two south of the DPS boundary, no wolf packs have ever been found there. No wolves from other U.S. wolf populations are known to have dispersed as far as the NRM DPS.

Until recently, no wild wolves had been confirmed west of the DPS boundary (although we occasionally got unconfirmed reports and 2 wolves were killed close to that boundary). Then, in July 2008, a wolf pack (2 adults and 6 pups) was discovered near Twisp, Washington (just east of the North Cascades and west of the DPS boundaries). These wolves did not originate from the NRM DPS; instead they likely originated from southcentral British Columbia (Allen 2008). The pack's territory is outside the NRM DPS and remains discrete from the NRM gray wolf population. The pack is being monitored via radio telemetry by Washington Department of Fish and Wildlife. Should this pack persist and other wolves follow, they would remain separated from the NRM DPS by unsuitable wolf habitat.

Although wolves can disperse over 1,092 km (680 mi) (with actual travel distances exceeding 10,000 km (6,000 mi)) (Fritts 1983, pp. 166–167; Missouri Department of Conservation 2001, pp. 1–2; Ream *et al.* 1991, pp. 351–352; Boyd and Pletscher 1999, p. 1094; Boyd *et al.* 2007; Wabakken *et al.* 2007, p. 1631), the average dispersal of NRM wolves is about 97 km (60 mi) (Boyd and Pletscher 1999, p. 1100; Boyd *et al.* 2007; Jimenez 2008d; Thiessen 2007, p. 72). Only 11 of over 200 confirmed NRM wolf dispersal events from 1992 through 2005 have been over 300 km (190 mi) and outside the core population (Boyd and Pletscher. 1999, p. 1094; Boyd *et al.* 2007). Undoubtedly many other dispersal events have occurred but not been detected because only 30 percent of the NRM wolf population has been radio-collared. All but three of these known U.S. long-distance dispersers remained within the proposed DPS. None of them found mates or survived long enough to form packs or breed in the U.S. (Boyd *et al.* 2007; Jimenez 2008d).

The first wolf confirmed to have dispersed (within the U.S.) beyond the boundary of the NRM DPS was killed by a vehicle collision along Interstate 70 in north-central Colorado in spring 2004. Although not confirmed, in early 2006, video footage of a black wolf-like canid was taken near Walden in northern Colorado, suggesting another dispersing wolf had traveled into Colorado. The subsequent status or location of that animal is unknown. On March 7, 2009, a dispersing wolf from the Yellowstone area was located by GPS radio-telemetry near Vail, Colorado. Finally, in spring 2006, the carcass of a male black wolf was found along Interstate 90 in western South Dakota. Genetic testing confirmed it was a wolf that had dispersed from the Yellowstone area.

No other unusual wolf dispersal events were documented in the NRM DPS in 2008. A radio-collared wolf from central Idaho continues to live in the GYA. It formed a new pack and bred in 2009. A report of a pack of wolves in northeastern Utah east of Flaming Gorge Reservoir (outside the NRM DPS) was investigated in spring 2008. The existence of this pack was not confirmed. A report of a wolf pack with pups in northeastern Oregon (inside the NRM DPS) was investigated in August 2008. The existence of this pack was not confirmed. A photograph of a black wolf-like canid taken in late 2008 in the central Cascade Range in Oregon (outside the NRM DPS) but its origin and fate remain unknown.

We expect that occasional lone wolves will continue to disperse between and beyond the currently occupied wolf habitat areas in Montana, Idaho, and Wyoming, as well as into States adjacent to the NRM DPS. However, pack development and persistence outside the NRM DPS is unlikely because wolves disperse as individuals that typically have low survival (Pletscher *et al.* 1997, p. 459) and suitable habitat is limited and distant (Carroll *et al.* 2003, p. 541) from the NRM wolf population.

No connectivity currently exists between the NRM wolf population and any other U.S. wolf packs or populations. While it is theoretically possible that a lone wolf might travel between the NRM wolf population and other U.S. packs or populations, such movement has never been documented and is likely to be rare because of both the distance and the intervening areas of unsuitable habitat.

Furthermore, the DPS policy does not require complete separation of one DPS from other U.S. packs or populations, but instead requires ''marked separation.'' Thus, if occasional individual wolves or packs disperse among populations, the NRM DPS could still display the required discreteness. Based on the information presented

above, we have determined that NRM gray wolves are markedly separated from all other gray wolf populations in the U.S.

Differences Among U.S. and Canadian Wolf Populations—The DPS policy allows us to use international borders to delineate the boundaries of a DPS if there are differences in control of exploitation, conservation status, or regulatory mechanisms between the countries. Significant differences exist in management between U.S. and Canadian wolf populations. About 52,000 to 60,000 wolves occur in Canada, where suitable habitat is abundant (Boitani 2003, p. 322). Because of this abundance, wolves in Canada are not protected by Federal laws and are only minimally protected in most Canadian provinces (Pletscher *et al.* 1991, p. 546). In the U.S., unlike Canada, Federal protection and intensive management has been necessary to recover the wolf (Carbyn 1983). If delisted, States in the NRM would carefully monitor and manage to retain populations at or above the recovery goal (*see* Factor D). Therefore, we will continue to use the U.S.-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.

Analysis for Significance

If we determine a population segment is discrete, we next consider available scientific evidence of its significance to the taxon to which it belongs. Our DPS policy states that this consideration may include, but is not limited to, the following factors: (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 NRM DPS and thus are not included in our analysis for significance.

Unusual or Unique Ecological Setting—Within the range of holarctic species, the NRM has amongst the highest diversity of large predators and native ungulate prey species, resulting in complex ecological interaction between the ungulate prey, predator and scavenger groups, and vegetation (Smith *et al.* 2003, p. 331). In the NRM DPS, gray wolves share habitats with black bears (*Ursus americanus*), grizzly bears (*U. arctos horribilis*), cougars (*Felis concolor*), lynx (*Lynx canadensis*), wolverine (*Gulo gulo*), coyotes (*Canis latrans*), foxes (*Vulpes vulpes*), badgers (*Taxidea taxus*), bobcats (*Felis rufus*), fisher (*Martes pennanti*), and marten (*Martes americana*). The unique and diverse assemblage of native prey include elk (*Cervus canadensis*), mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), moose (*Alces alces*), woodland caribou (*Rangifer caribou*), bighorn sheep (*Ovis canadensis*), mountain goats (*Oreamnos americanus*), pronghorn antelope (*Antilocapra americana*), bison (*Bison bison*) (only in the GYA), and beaver (*Castor canadensis*). This complexity leads to dramatic and unique ecological cascades in pristine areas, such as in YNP. While these effects likely still occur at varying degrees elsewhere they are increasingly modified and subtle the more an area is affected by humans (Smith *et al.* 2003, pp. 334–338; Robbins 2004, pp. 80–81; Campbell *et al.* 2006, pp. 747–753; Hebblewhite *et al.* 2005, p. 2135; Garrott *et al.* 2005, p. 1245). For example, wolves appear to be changing elk behavior and elk relationships and competition with other native ungulates in YNP. These complex interactions may increase streamside willow production and survival (Ripple and Beschta 2004, p. 755), that in turn can affect beaver and nesting by riparian birds (Nievelt 2001, p. 1). 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, p. 996; Wilmers and Getz 2005, p. 571). The wolf population in the NRM has extended the southern range of the contiguous gray wolf population in western North America nearly 400 miles (640 km) into a much more diverse, ecologically complex, and unique assemblage of species than is found elsewhere within occupied wolf habitat in most of the northern hemisphere.

Significant Gap in the Range of the Taxon—Wolves once lived throughout most of North America. Wolves have been extirpated from most of the southern portions of their historic 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 1,600 km (1,000 mi) 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 the NRM, most noticeably in the most pristine and wildest areas (Smith *et al.* 2003, pp. 334–338; Robbins 2004, pp. 80–81; Campbell *et al.* 2006, pp. 747–753; Hebblewhite and Smith in press, pp. 1–6).

Given the wolf's historic occupancy of the conterminous U.S. and the portion of the historic range the conterminous U.S. represents, recovery in portions of the lower 48 States has long been viewed as important to the taxon (39 FR 1171, January 4, 1974; 43 FR 9607, March 9, 1978). The NRM DPS is significant in achieving this objective, as it is 1 of only 3 populations of wolves in the lower 48 States and currently constitutes nearly 25 percent of all wolves in the lower 48 States.

We conclude, based on our analysis of the best available scientific information, that the NRM 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 DPS meets the criterion of significance under our DPS policy. Because the NRM gray wolf population is both discrete and significant, it is a valid DPS.

Agency's Past Practice and History of Using DPSs

Of the over 370 native vertebrate ''species'' listed under the Act, 77 are listed as less than an entire taxonomic species or subspecies (henceforth referred to as populations) under one of several authorities including the DPS language in the definition of ''species''. Of these 77 listed populations 32 predate the 1996 DPS policy (61 FR 4722); therefore, the final listing determinations for these populations did not include formal DPS analyses per the 1996 DPS policy. Specifically, the 77 populations encompass 51 different species or subspecies. During the history of the Act, the Service and NMFS have taken actions with respect to populations in 98 listing, reclassification, and delisting actions. The majority of those actions identified a classification other than a taxonomically recognized species or subspecies at the time of listing. In several instances, however, the agencies have identified a DPS and, as appropriate, revised the list of Threatened and Endangered Wildlife in a single action. For example, we (1) established a DPS of the grizzly bear (*Ursus arctos horribilis*) for the Greater Yellowstone Area and surrounding area,

within the existing listing of the grizzly bear in the lower 48 States, and removed this DPS from the List of Threatened and Endangered Wildlife (March 29, 2007; 72 FR 14865); (2) established two DPSs of the Columbian white-tailed deer (*Odocoileus virginianus leucurus*): The Douglas County DPS and the Columbia River DPS; and removed the Douglas County DPS from the List of Threatened and Endangered Wildlife (July 24, 2003; 68 FR 43647); (3) removed the brown pelican (*Pelecanus occidentalis*) in the Southeastern United States from the List of Endangered and Threatened Wildlife and continued to identify the brown pelican as endangered throughout the remainder of its range (February 4, 1985; 50 FR 4938); (4) identified the American crocodile (Crocodylus acutus) in Florida as a DPS within the existing endangered listing of the American crocodile in the United States and reclassified the Florida DPS from endangered to threatened (March 20, 2007; 71 FR 13027); and (5) amended the List of Endangered and Threatened Wildlife and Plants by revising the entry for the gray whale (Eschrichtius robustus) to remove the eastern North Pacific population from the List while retaining the western North Pacific population as endangered (June 16, 1994; 59 FR 31094)). We also proposed in 2000 to identify four DPSs within the existing listing of the gray wolf in the lower 48 States and to reclassify three of the DPSs from endangered to threatened (July 13, 2000; 65 FR 43450). As described above under ''Previous Federal Action,'' the final rule we issued in 2003 identified three gray wolf DPSs and reclassified two of the DPSs from endangered to threatened (April 1, 2003; 68 FR 15804). Although courts subsequently invalidated these DPSs, they did not question the Service's authority to identify and reclassify DPSs within a larger pre-existing listing. Identifying and delisting the Western Great Lakes DPS of gray wolves is consistent with the Service's past practice and does not represent a change in agency position.

Recovery

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, p. i; Fritts *et al.* 1995, p. 111). The NRM Wolf Recovery Plan (recovery plan) was approved in 1980 (Service 1980, p. i) and revised in 1987 (Service 1987, p. i). Recovery plans are not regulatory documents and are instead intended to provide guidance to the Service, States, and other partners on methods of minimizing threats to listed species and on criteria that may be used to determine when recovery is achieved. There are many paths to accomplishing recovery of a species and recovery may be achieved without all criteria being fully met. For example, one or more criteria may have been exceeded while other criteria may not have been accomplished. In that instance, the Service may judge that the threats have been minimized sufficiently, and the species is robust enough to reclassify from endangered to threatened or to delist. In other cases, recovery opportunities may have been recognized that were not known at the time the recovery plan was finalized. These opportunities may be used instead of methods identified in the recovery plan. Likewise, information on the species may be learned that was not known at the time the recovery plan was finalized. The new information may change the extent that criteria need to be met for recognizing recovery of the species. Recovery of a species is a dynamic process requiring adaptive management that may, or may not, fully follow the guidance provided in a recovery plan.

The 1980 recovery plan's objective was to re-establish and maintain viable populations of the NRM wolf (*C. l. irremotus*) in its former range where feasible (Service 1980, p. iii) but there were no recovery goals. The 1980 plan covered an area similar to the NRM DPS, as it was once believed to be the range of the NRM wolf subspecies. It recommended that recovery actions be focused on the large areas of public land in northwestern Montana, central Idaho, and the GYA. The revised recovery plan (Service 1987, p. 57) concluded that the subspecies designations may no longer be valid and simply referred to gray wolves in the NRMs. Consistent with the 1980 plan it also recommended focusing recovery actions on the large blocks on public land in the NRM. The 1987 plan specified a recovery criterion of a minimum of 10 breeding pairs of wolves (defined as 2 wolves of opposite sex and adequate age, capable of producing offspring) for a minimum of 3 successive years in each of 3 distinct recovery areas including: (1) Northwestern Montana (Glacier National Park; the Great Bear, Bob Marshall, and Lincoln Scapegoat Wilderness Areas; and adjacent public and private 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 YNP area (including the Absaroka-Beartooth, North Absaroka, Washakie, and Teton Wilderness Areas; and adjacent public and private lands). That plan recommended that wolf establishment not be promoted outside these distinct recovery areas, but that connectivity between them be somehow encouraged. However, no attempts were made to prevent wolf pack establishment outside of the recovery areas unless chronic conflict required resolution (Service 1994, p. 1–15, 16; Service 1999, p. 2).

The 1994 EIS on wolf reintroduction reviewed wolf recovery in the NRM and the adequacy of the recovery goals because we were concerned that the 1987 goals might be insufficient (Service 1994, pp. 6:68–78). We were particularly concerned about the 1987 definition of a breeding pair, since any male and female wolf are 'capable' of producing offspring and lone wolves may not have territories. We also believed the relatively small 'hard' recovery areas greatly reduced the amount of area that could be used by wolves and would almost certainly eliminate the opportunity for meaningful natural demographic and genetic connectivity. The Service conducted a thorough literature review of wolf population viability analysis and minimum viable populations, reviewed the recovery goals for other wolf populations, surveyed the opinions of the top 43 wolf experts in North America, of which 25 responded, and incorporated our own expertise into a review of the NRM wolf recovery goal. We published our analysis in the Service's EIS and in a peer-reviewed paper (Service 1994, Appendix 8 & 9; Fritts and Carbyn 1995, pp. 26–38). Our analysis concluded that the 1987 recovery goal was, at best, a minimum recovery goal, and that modifications were warranted on the basis of more recent information about wolf distribution, connectivity, and numbers. We also concluded ''Data on survival of actual wolf populations suggest greater resiliency than indicated by theory'' and theoretical treatments of population viability ''have created unnecessary dilemmas for wolf recovery programs by overstating the required population size'' (Fritts and Carbyn 1995, p. 26). Based on our analysis, we redefined a breeding pair as 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. We also concluded that ''Thirty or more breeding pair comprising some 300+ wolves in a metapopulation (a population that exists as partially

isolated sets of subpopulations) with genetic exchange between subpopulations should have a high probability of long-term persistence'' because it would contain enough individuals in successfully reproducing packs that were distributed over distinct but somewhat connected large areas, to be viable for the long-term (Service 1994, p. 6:75). We explicitly stated the required genetic exchange could occur by natural means or by human-assisted migration management and that dispersal of wolves between recovery areas was evidence of that genetic exchange (Service *et al.* 1994, Appendix 8, 9). In defining a ''Recovered Wolf Population'' we found ''in the northern Rockies a recovered wolf population is 10 breeding pairs of wolves in each of 3 areas for 3 successive years with some level of movement between areas'' (Service 1994, p. 6–7). We further determined that a metapopulation of this size and distribution among the three areas of core suitable habitat in the NRM DPS would result in a wolf population that would fully achieve our recovery objectives.

Since 1994, we have believed movement of individuals between the metapopulation segements could occur either naturally or by human-assisted migration management (Service 1994, p. 7–67). Specifically, we stated ''The importance of movement of individuals between sub-populations cannot be overemphasized. The dispersal ability of wolves makes such movement likely, unless wolves were heavily exploited between recovery areas, as could happen in the more developed corridor between central Idaho and YNP. Intensive migration management might become necessary if 1 of the 3 sub-populations should develop genetic or demographic problems. (We saw) no reason why migration management should be viewed negatively. It will be a necessity in other wolf recovery programs. Some, however, may view such management intervention as 'unnatural' '' (Service 1994, p. 7–67). Furthermore, we found ''that the 1987 wolf recovery plan's population goal of 10 breeding pairs of wolves in 3 separate recovery areas for 3 consecutive years (was) reasonably sound and would maintain a viable wolf population into the foreseeable future. The goal is somewhat conservative, however, and should be considered minimal. The addition of a few extra pairs would add security to the population and should be considered in the post-EIS management planning. That could always be done as a periodic infusion if deemed necessary'' (Service 1994, p. 6–75).

We conducted another review of what constitutes a recovered wolf population in late 2001 and early 2002 to reevaluate and update our 1994 analysis and conclusions (Service 1994, Appendix 9). We attempted to survey the same 43 experts we had contacted in 1994 as well as 43 other biologists from North America and Europe who were recognized experts about wolves and/or conservation biology. In total 53 people provided their expert opinion regarding a wide range of issues related to the NRM recovery goal. We also reviewed a wide range of literature, including wolf population viability analysis from other areas (Bangs 2002, pp. 1–9). Despite varied professional opinions and a great diversity of suggestions, experts overwhelmingly thought the recovery goal derived in our 1994 analysis was more biologically appropriate than the 1987 recovery plan's criteria for recovery and represented a viable and recovered wolf population. Reviewers also thought genetic exchange, either natural or human-facilitated, was important to maintaining the metapopulation configuration and wolf population viability. Reviewers also thought the proven ability of a breeding pair to show successful reproduction was a necessary component of a biologically meaningful breeding pair definition. Reviewers recommended other concepts/numbers for recovery goals, but most were slight modifications to those we recommended in our 1994 analysis. While experts strongly (78 percent) supported that our 1994 conclusions represented a viable wolf population, they also tended to believe that wolf population viability was enhanced by higher rather than lower population levels and longer than shorter demonstrated time frames. Five hundred wolves and five years were common minority recommendations. A slight majority indicated that even the 1987 recovery goal of only 10 breeding pairs (defined as a male and female capable of breeding) in each of three distinct recovery areas may be viable, given the persistent of other small wolf populations in other parts of the world. The results of previous population viability analysis for other wolf populations varied widely, and as we had concluded in our 1994 analysis, reviewers in 2002 concluded theoretical results were strongly dependent on the variables and assumptions used in such models and conclusions often predicted different outcomes than actual empirical data had conclusively demonstrated. Based on that review, we reaffirmed our more relevant and stringent 1994 definition of wolf breeding pairs, population viability, and recovery (Service 1994, p. 6:75; Bangs 2002, p. 1–9).

The 2002 reevaluation of the 1994 wolf recovery goal by a broader spectrum of experts in wolf conservation also repeatedly recognized connectivity among the core recovery areas as critical, but this connectivity could be achieved through naturally dispersing wolves and/or by human-assisted migration management. Specifically, we stated ''Connectivity was the single issue brought up most often by reviewers. Many commented that wolves are unusually good dispersers and movement between core recovery areas was probably not going to be a significant wolf conservation issue in the NRM. Several believed that wolves would soon colonize neighboring states. Nearly everyone commented that the interchange of individuals between the sections of the metapopulation and more importantly maintenance of connection to the Canadian population. Several comments emphasized the importance of maintaining some minimum number of wolves in northwestern Montana to maintain the connection to the Canadian population. Other reviewers noted that such connectivity could be easily maintained by management actions (such as translocation) rather than natural dispersal. Movement into the GYA was mentioned as a specific concern by some because that was the only recovery area where wolf movement from other recovery areas appeared it could be a concern, and it was the southern-most tip of a much larger connected North American wolf population. A majority believed the Service's proposal defined a viable wolf population but others believed it needed to be improved by providing a measurable definition of connectivity. Others believed that documenting successful reproduction was an important measure of population viability and liked the concept used in the 1994 EIS definition. The importance of future wolf management (state or tribal management), primarily in maintaining human-caused mortality below a level that would cause extirpation and management that would foster some connectivity (either natural or man-induced) were the most critical components of determining long-term population viability * * * The true test of wolf population viability will be determined by subsequent management practices. Past management practices—such as (1) reintroduction of wolves

from two Canadian sources (Alberta and British Columbia) and from numerous packs in each area, (2) subsequent management relocations between all three recovery areas, (3) the natural dispersal capabilities of wolves and proximity of core recovery areas to one another, (4) documented routine interchange with Canadian wolf populations and between Idaho and northwestern Montana, (5) a young population age structure with successful pup production and survival, and (6) the establishment of wolf populations in and around core refugia (central Idaho Wilderness, YNP, Glacier National Park and associated public lands to these areas) have produced a robust and viable wolf population that currently has very high genetic and demographic diversity that occupies core refugia in the highest quality wolf habitat in the NRM of Montana, Idaho, and Wyoming. Maintenance of those conditions in the wolf population will depend solely on long-term future management to (1) regulate human-caused mortality and (2) maintain genetic connectivity among population segments, including Canada, either through deliberate relocation of wolves and/or encouraging sufficient natural dispersal'' (Bangs 2002, pp. 3–4, 8–9).

Development of the Service's recovery goal clearly recognized that the key to wolf recovery was establishing a viable demographically and genetically diverse wolf population in the core recovery areas of the NRM. We would ensure its future connectivity by promoting natural dispersal and genetic connectivity between the core recovery segments and/or by human-assist migration management in the unlikely event it was ever required (Fritts and Carbyn 1995; Groen *et al.* 2008).

We measure the wolf recovery goal by the number of breeding pairs as well as by the number of wolves because wolf populations are maintained by packs that successfully raise pups. We use 'breeding pairs' (packs that have at least an adult male and an adult female and that raised at least 2 pups until December 31) to describe successfully reproducing packs (Service 1994, p. 6:67; Bangs 2002, pp. 7–8; Mitchell *et al.* 2008). The breeding pair metric includes most of the important biological concepts in wolf conservation. Specifically, we thought it was important for breeding pairs to have: Both male and female member together going into the February breeding season; successful occupation of a distinct territory (generally 500–1,300 km^2 (200–500 mi^2) and almost always in suitable habitat); enough pups to replace two adults; off-spring that become yearling dispersers; at least 4 wolves following the point in the year with the highest mortality rates (summer and fall); all social structures and age classes represented within a wolf population; and adults that can raise and mentor younger wolves.

Often we do not know if a specific pack actually contains an adult male, adult female, and two pups in winter; however, group size has proven to have a strong correlation with breeding pair status (Mitchell *et al.* 2008). Research indicates a pack size of around 9 equates to one breeding pair (large packs have complex age classes—pups, yearlings and older adults). In the future, the States may be able to use pack size in winter as a surrogate to help reliably identify each pack's contribution toward meeting our breeding pair recovery criteria and to better predict the effect of managing for certain pack sizes on wolf population recovery.

We also have determined that an essential part of achieving recovery is an equitable distribution of wolf breeding pairs and individual wolves among the three States and the three recovery zones. Like peer reviewers in 1994 and 2002, we concluded that NRM wolf recovery and long-term wolf population viability is dependent on its distribution as well as maintaining the minimum numbers of breeding pairs and wolves. While uniform distribution is not necessary, a well-distributed population with no one State/recovery area maintaining a disproportionately low number of packs or number of individual wolves is needed to maintain wolf distribution in and adjacent to core recovery areas and other suitable habitat throughout the NRM and to facilitate natural connectivity.

Following the 2002 review of our recovery criteria, we began to use States, in addition to recovery areas, to measure progress toward recovery goals (Service *et al.* 2003–2009, Table 4). Because Montana, Idaho, and Wyoming each contain the vast majority of one of the original three core recovery areas, we determined the metapopulation structure would be best conserved by equally dividing the overall recovery goal between the three States. This approach made each State's responsibility for wolf conservation fair, consistent, and clear. It avoided any possible confusion that one State might assume the responsibility for maintaining the required number of wolves and wolf breeding pairs in a shared recovery area that was the responsibility of the adjacent State. State regulatory authorities and traditional management of resident game populations occur on a State-by-State basis. Management by State would still maintain a robust wolf population in each core recovery area because they each contain manmade or natural refugia from human-caused mortality (e.g., National Parks, wilderness areas, and remote Federal lands) that guarantee those areas remain the stronghold for wolf breeding pairs and source of dispersing wolves in each State. Recovery targets by State promote connectivity and genetic exchange between the metapopulation segments by avoiding management that focuses solely on wolf breeding pairs in relatively distinct core recovery areas and promote a minimum level of potential natural dispersal to and from each population segment. This approach also will increase the numbers of potential wolf breeding pairs in the GYA because it is shared by all three States. A large and well-distributed population within the GYA is especially important because it is the most isolated recovery segment within the NRM DPS (Oakleaf *et al.* 2005, p. 554; vonHoldt *et al.* 2007, p. 19).

The numerical component of the recovery goal represents the minimum number of breeding pairs and individual wolves needed to achieve and maintain recovery. To ensure that the NRM wolf population always exceeds the recovery goal of 30 breeding pairs and 300 wolves, wolves in each State shall be managed for at least 15 breeding pairs and at least 150 wolves in mid-winter. This and other steps, including human-assisted migration management if required (discussed below), will maintain the NRM DPS's current metapopulation structure. Further buffering our minimum recovery goal is the fact that Service data since 1986 indicate that, within the NRM DPS, each breeding pair has corresponded to 14 wolves in the overall NRM wolf population in mid-winter (including many wolves that travel outside these recognized breeding pairs) (Service *et al.* 2008, Table 4). Thus, managing for 15 breeding pairs per State will result in substantially more than 150 wolves in each State (>600 in the NRM). Additionally, because the recovery goal components are measured in mid-winter when the wolf population is near its annual low point, the average annual wolf population will be much higher than these minimal goals.

We further improved, provided additional safety margins, and assured that the minimum recovery criteria would always be exceeded in our 2009 post-delisting monitoring plan. Three scenarios could lead us to initiate a status review and analysis of threats to

determine if relisting is warranted including: (1) If the wolf population for any one State falls below the minimum NRM wolf population recovery level of 10 breeding pairs of wolves and 100 wolves in either Montana, Idaho, and Wyoming at the end of the year; (2) if the portion of the wolf population in Montana, Idaho, or Wyoming falls below 15 breeding pairs or 150 wolves at the end of the year in any one of those States for 3 consecutive years; or (3) if a change in State law or management objectives would significantly increase the threat to the wolf population. Overall, we believe the NRM wolf population will be managed for over 1,000 wolves including over 300 wolves and 30 breeding pairs in the GYA (in 2008 there were 35 breeding pairs and 449 wolves in the GYA). This far exceeds post-delisting management targets of at least 45 breeding pairs and more than 450 wolves in the NRM. The NRM wolf population: (1) Has at least this number of reproductively successful packs and this number of individual wolves each winter (near the low point in the annual cycle of a wolf population); (2) is equitably distributed within the 250,000 km^2 (100,000 mi^2) area containing 3 areas of large core refugia (National Parks, wilderness areas, large blocks of remote secure public land) and at least 170,228 km^2 (65,725 mi^2) of suitable wolf habitat; and (3) is genetically diverse and has demonstrated successful genetic exchange through natural dispersal and human-assisted migration management between all three core refugia. It therefore no longer needs the protections of the Act and is a viable and fully recovered wolf population.

Our recovery and post-delisting management goals were designed to provide the NRM gray wolf population with sufficient representation, resilience, and redundancy for their long-term conservation. We have expended considerable effort to develop, repeatedly reevaluate, and when necessary modify, the recovery goals (Service 1987, p. 12; Service 1994, Appendix 8 and 9; Fritts and Carbyn 1995, p. 26; Bangs 2002, p. 1; 73 FR 10514, February 27, 2008; and this final rule). After evaluating all available information, we conclude the best scientific and commercial information available continues to support the ability of these recovery goals to ensure the population does not again become in danger of extinction.

Genetic Diversity Relative to our Recovery Criteria—Currently, genetic diversity throughout the NRM is very high (Forbes and Boyd 1996, p. 1084; Forbes and Boyd 1997, p. 226; vonHoldt *et al.* 2007, p. 19). Wolves in northwestern Montana and both the reintroduced populations are as genetically diverse as their source populations in Canada; thus, inadequate genetic diversity is not a wolf conservation issue in the NRM at this time (Forbes and Boyd 1997, p. 1089; vonHoldt *et al.* 2007, p. 19). Genetic connectivity resulting from natural dispersal alone, even in the GYA, appears adequate to prevent genetic drift and inbreeding depression that could threaten the wolf population. As a result, there is currently no need for management activities designed to further increase genetic diversity anywhere in the NRM DPS. However, should genetic problems ever materialize, an outcome we view as extremely unlikely, the States will utilize agency assisted genetic management to address the issue. Because genetic changes happen very slowly, the States would have many years, perhaps decades, to design and implement appropriate remedial actions. In short, the NRM wolf population is not now and will not ever be threatened by genetic diversity issues. This issue is discussed further in our response to comments and in Factor E below.

Recovery and Genetics issues raised by the July 18, 2008 federal court injunction—The July 18, 2008, U.S. District Court for the District of Montana preliminary injunction order heavily cited vonHoldt *et al.* (2007). This study concluded ''if the YNP wolf population remains relatively constant at 170 individuals (estimated to be YNP's carrying capacity), the population will demonstrate substantial inbreeding effects within 60 years,'' resulting in an ''increase in juvenile mortality from an average of 23 to 40%, an effect equivalent to losing an additional pup in each litter.'' The court also cited previous Service statements that call for ''genetic exchange'' among recovery areas. The court further stated that dispersal of wolves between the GYA and the northwestern Montana and central Idaho core recovery areas was ''a precondition to genetic exchange.'' The preliminary injunction order cited our 1994 EIS (Service 1994) and vonHoldt *et al.* (2007) to support its conclusion that a metapopulation had not been demonstrated in the NRM.

The vonHoldt *et al.* (2007) paper did an excellent job of analyzing the empirical data regarding the pedigree for YNP wolves. That data proved the ''almost complete'' natural selection for outbreeding by wolves and the high genetic diversity of wolves in YNP. We appreciate their recognition of our deliberate efforts to conserve genetic diversity. Specifically vonHoldt *et al.* (2007) stated that ''Overall, our findings demonstrate the effectiveness of the reintroduction in preserving genetic diversity over the first decade of wolf recovery in Yellowstone'' (vonHoldt *et al.* 2007, p. 19). Furthermore, we agree that any totally isolated wildlife population that is never higher than 170 individuals which randomly breeds will lose genetic diversity over time. It is also true that high levels of inbreeding can sometimes, but not always, result in demographic issues such as reduced survival or reduced fertility. Such outcomes sometimes, but not always, result in demographic problems that threaten population viability.

However, we question many of the assumptions that underpin the predictive modeling portion of vonHoldt *et al.* (2007) study's conclusions. First, while the study found no evidence of genetic exchange into YNP (8,987 km^2 (3,472 mi^2)), the Park is only a small portion of the GYA (63,700 km^2 (24,600 mi^2)). Further limiting the study's ability to detect genetic exchange among subpopulations is the fact that most wolves that disperse to the GYA tend to avoid areas with existing resident packs or areas with high wolf densities, such as YNP. Moreover, even among the YNP wolves the study was limited to a subsample of Park wolves from 1995–2004 (i.e., the radio collared wolves). Thus, not surprisingly, subsequent analysis of additional wolves across the GYA has demonstrated gene flow among the GYA and the other recovery areas (vonHoldt *et al.* 2008; Wayne 2009, pers. comm.).

It is also important to consider that our ability to detect genetic exchange within the NRM population is further limited by the genetic similarity of the NRM subpopulations. Specifically, because both the central Idaho and GYA subpopulations originate from a common source, only first and possible second generation offspring of a dispersing wolf can be detected. Additional genetic analysis of wolves from throughout the NRM population, including a larger portion of the GYA than just YNP, is ongoing.

Second, the vonHoldt *et al.* (2007) prediction of eventual inbreeding in YNP relies upon several unrealistic assumptions. One such assumption limited the wolf population analysis to YNP's (8,987 km^2 (3,472 mi^2)) carrying capacity of 170 wolves, instead of the more than 300 wolves likely to be managed for in the entire GYA (63,700 km^2 (24,600 mi^2)) by Montana, Idaho, and Wyoming. The vonHoldt *et al.*, (2007) predictive model also capped the

population at the YNP population's winter low point, rather than at higher springtime levels when pups are born. Springtime levels are sometimes double the winter low. Most importantly, the vonHoldt *et al.* (2007) assumed no gene flow into the area; an assumption now proven incorrect. This issue is fully explained in Factor E below.

Conclusion of a reanalysis of the wolf recovery goals for the NRM DPS—In its July 18, 2008 preliminary injunction order, the District Court concluded that the Plaintiffs were likely to succeed on their claim that the NRM had not achieved its recovery goal because genetic exchange was 'promised' by the recovery criteria but had not occurred between wolves in the GYA area and the other recovery areas. The court cited a recent genetic study of wolves in YNP (vonHoldt *et al.* 2007). The court also suggested that higher rates of mortality associated with State management would further reduce the future opportunity for genetic exchange and ultimately threatened the wolf population. As a result of the court ruling we have reevaluated our wolf recovery goal for the NRM DPS and determined it is still scientifically valid, represents the minimum wolf population that would not be threatened or endangered in the foreseeable future, and all the biological conditions associated with the recovery goal have been completely achieved. Our reasoning is detailed below and in our discussion of Factor E.

The wolf recovery goal for the NRM has been repeatedly reevaluated and improved as new scientific information warranted. Modifications of the 1987 recovery plan goals based on recent information, further analysis, and new scientific thinking were made in 1994 (Service 1994), 1999 (Service 1999), 2002 (Bangs 2002), 2008 (73 FR 10514, February 27, 2008), and in this rule. As a result of the court ruling, we have carefully reevaluated our recovery goal again and reaffirmed that ''Thirty or more breeding pairs comprising some 300+ wolves in a metapopulation (a population that exists as partially isolated sets of subpopulations) with genetic exchange between subpopulations should have a high probability of long-term persistence'' because it would contain enough individuals in successfully reproducing packs that were distributed over distinct but somewhat connected large areas of suitable habitat, to be viable for the long-term (Service 1994, p. 6:75). The vast majority of wolf experts throughout the world who were contacted believed the NRM wolf recovery goal represented the minimum criteria to describe a viable and recovered wolf population (Service 1994, p. 6–75; Bangs 2002).

Genetic studies in the NRM are continuing. While that work demonstrates that both human-assisted and natural genetic exchange has occurred in the GYA, the rate at which this exchange has naturally occurred in the GYA is being determined. However, vonHoldt *et al.* (2008) reported that ''Based on migrant detection and assignment test our results suggest that adequate genetic connectivity exists between central Idaho and northwestern Montana populations, there is limited effective dispersal between central Idaho or northwestern Montana to GYA (although 15 unknown GYA individuals need to be resolved) and there have been no migrants genetically detected that have (naturally) dispersed into the YNP portion of the GYA.'' They went on to state ''Since this analysis only includes samples up to 2004, and due to sample size limitations in some areas (GYA outside of YNP), adding more samples and including samples up to 2008 may alter interpretation. Specifically, genetic connectivity may be higher between GYA and other recovery areas than currently believed.'' We concurred with that determination. Indeed subsequent analysis confirmed offspring from some wolves that naturally dispersed into the GYA, as well as the wolf pups that were relocated into YNP in 1997, have been detected as additional samples were analyzed (Wayne 2009, pers. comm.). We will continue to collect and analyze genetic samples to monitor the genetic health of the NRM wolf population (Groen *et al.* 2008).

Regardless of the outcome of those ongoing genetic studies—

(1) Ongoing or confirmed genetic exchange was never required by our recovery goal, although it has now been documented. The recovery goal assumed that the presence of dispersing wolves from other recovery areas alone was enough evidence of the likelihood of 'genetic' exchange among recovery areas (the reason wolves disperse is to find mates and breeding opportunities). Sixty-eight percent of relocated (human-assisted dispersal) wolves in the NRM became breeders (Bradley *et al.* 2005). The presence of individual natural dispersing wolves in every recovery segment, including the GYA, indicates that the NRM has a metapopulation structure and that no segment is completely isolated from the others.

(2) Because GYA and central Idaho wolves share a recent common genetic history (siblings released in each area), it is very difficult to detect anything beyond first or second generation offspring from long range dispersing wolves. Significant changes in genetic health generally take place over many generations and decades not years.

(3) A metapopulation is one where no segment is totally isolated from the others. A metapopulation does not require a certain level of natural or human-assisted migration management during a specified time period to meet the definition of a metapopulation. We have proven human-assisted migration management is easy to do with wolves. However, at least for decades, there should be no genetic or demographic reasons to move more wolves or their genes between the subpopulations and/or Canada. However, it is also common sense that a wolf population in three equal subpopulations managed near the minimum levels of 500 wolves would be far more likely to require future human-assisted migration management than a wolf population managed at over 1,000 wolves in mid-winter.

(4) The assertion that successful recovery can only depend on solely natural processes is not accurate. If that were the case management of any wolf population, including the ongoing red wolf and Mexican wolf programs, as well as in any other potential wolf recovery programs in the U.S. (or in many parts of the world) could never lead to recovery. In addition, nearly all recovery programs under the Act and the subsequent management of those populations after delisting will require human intervention such as captive breeding, relocations, population augmentations, control of exotics or predators, maintenance or preservation of important habitat through prescribed fire, control of fire, flooding, and etc. In addition, most routine State and federal management programs for common wildlife species still require continued human management intervention by: Human control by agencies or by public hunts to raise management funding, limit property damage, and foster public tolerance; reintroductions, augmentation and captive breeding/rearing; habitat manipulation (fire and firefighting, logging, crops, water control structures, etc.); control of exotics, invasive species, or pests; and many other common wildlife management tools.

(5) The Service's recovery goal never required that offspring from long distance dispersing wolves and resident wolves be proven for the recovery goal to be met. Relocations or mere presence of dispersing wolves was believed to be adequate proof of connectivity.

''Recovered Wolf Population—In the northern Rockies a recovered wolf population is 10 breeding pairs of

wolves in each of 3 areas for 3 successive years with some level of wolf movement between areas'' (Service 1994, pp. 6–7). However, regardless of the 1994 definition, natural dispersal and human-assisted migration management has resulted in documented genetic exchange between dispersing and resident wolves among all three recovery areas, including the GYA.

(6) The level of natural dispersal that has been documented to date makes it highly unlikely that further human-assisted migration management would ever be required—even in the GYA, by far the most isolated recovery area in the NRM, especially if populations are managed at higher (>1,000 wolves) rather than lower (<500 wolves) numbers.

(7) There are currently absolutely no genetic or demographic problems in any of the core recovery segments, including the GYA. The proximity of the three NRM recovery segments and the natural dispersal abilities of wolves represent a classic wolf metapopulation structure that will be maintained into the foreseeable future. The States, except Wyoming, committed to initiate migration management, should it ever needed, and their commitment completely resolves a highly unlikely theoretical future genetic inbreeding problem (that would still not threaten or endanger the NRM wolf population) by a guaranteed proven solution to genetic inbreeding; namely human-assisted migration management (Groen *et al.* 2008).

(8) The States (except Wyoming, which declined to sign the 2008 Genetics Memorandum of Understanding (MOU) (Groen *et al.* 2008) and Service have committed to maintain that natural metapopulation structure of the NRM wolf population to the extent possible by encouraging natural dispersal and effective migrants and have implemented management practices that should foster both (maintaining the wolf population at higher rather than minimum levels, greater rather than more restricted pack distribution throughout suitable habitat, and reducing human-caused wolf mortality during key dispersing and reproductive time periods, and maintain the integrity of the core recovery areas/refugia (largely National Parks and wilderness areas)). In addition the States and Service and other federal agencies and have committed to monitor wolf genetics over time and should data suggest it is appropriate, conduct human-assisted migration management, which we believe is extremely unlikely to be necessary (Groen *et al.* 2008).

Monitoring and Managing Recovery—In 1989, we formed an Interagency Wolf Working Group (Working Group) composed of Federal, State, and Tribal agency personnel (Bangs 1991, p. 7; Fritts *et al.* 1995, p. 109; Service *et al.* 1989–2009, p. 1). The Working Group conducted four basic recovery tasks (Service *et al.* 1989–2009, pp. 1–2), 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 them, conducting other non-lethal measures, or by killing them (Bangs *et al.* 2006, p. 7); (3) conduct research and publish scientific publications on wolf relationships to ungulate prey, other carnivores and scavengers, livestock, and people; and (4) provide accurate science-based information to the public and mass media so that people could develop their opinions about wolves and wolf management from an informed perspective.

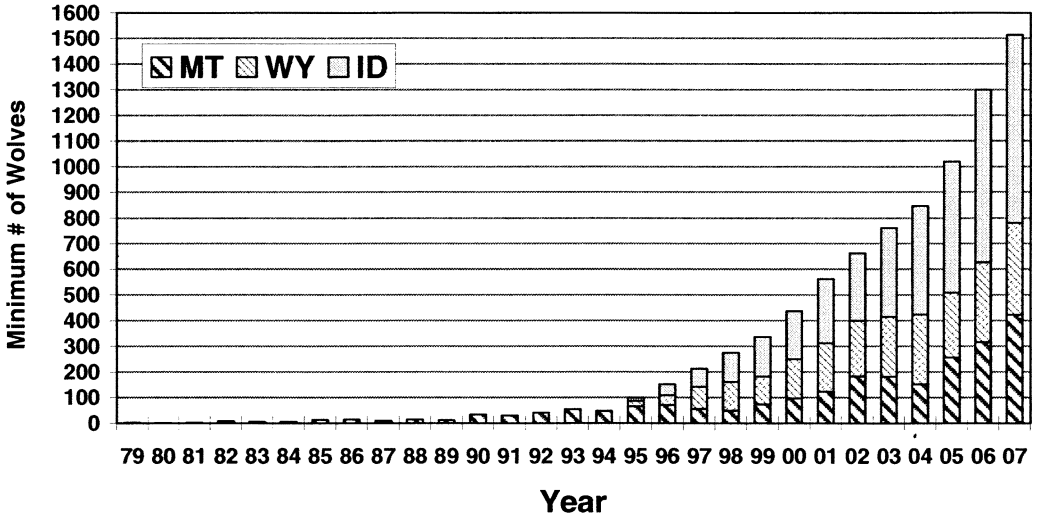
The size and distribution of the wolf population is estimated by the Working Group each year and, along with other information, is published in an interagency annual report (Service *et al.* 1989–2009, Table 4, Figure 1). Since the early 1980s, the Service and our cooperating partners have radio-collared and monitored over 1,100 wolves in the NRM to assess population status, conduct research, and to reduce/resolve conflict with livestock. The Working Group's annual population estimates represent the best scientific and commercial data available regarding year-end NRM gray wolf population size and trends, as well as distributional and other information.

Recovery by State—At the end of 2000, the NRM population first met its overall 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.* 2001, Table 4). Because the recovery goal must be achieved for 3 consecutive years, the temporal element of recovery was not achieved until the end of 2002 when 663 wolves and 49 breeding pairs were present (Service *et al.* 2003, Table 4). By the end of 2008, the NRM wolf population will have achieved its numerical and distributional recovery goal for 9 consecutive years (Service *et al.* 2001–2009, Table 4; Service 2008; 68 FR 15804, April 1, 2003; 71 FR 6634, February 8, 2006).

By the end of 2008, the NRM gray wolf population included approximately 1,639 NRM wolves (491 in Montana; 846 in Idaho; 302 in Wyoming) in 95 breeding pairs (34 in Montana; 39 in Idaho; 22 in Wyoming). The wolf population estimate for 2008 is slightly higher than that for 2007, indicating a declining rate of increase as suitable habitat becomes increasingly saturated with resident wolf packs.

From 1995 to 2008, the NRM wolf population increased an average of about 22 percent annually with increases ranging from 8 to 50 percent (Service *et al.* 2009, Table 4). In 2008 the overall population increased at the slowest rate since 1995. Figure 2 illustrates wolf population trends by State from 1979 to 2007.

Figure 2. Northern Rocky Mountain Wolf Population Trends by State 1979-2007



As discussed previously, after the 2002 peer review of the wolf recovery efforts, we began using States, in addition to recovery areas, to measure progress toward recovery goals (Service *et al.* 2003–2009, Table 4). However, because the original recovery plan included goals for core recovery areas we have included the following discussion on the history of the recovery efforts and status of these core recovery areas, including how the wolf population's distribution and metapopulation structure is important to maintaining its viability and how the biological characteristics of each core recovery area differ (Service *et al.* 2009, Table 4).

Recovery in the Northwestern Montana Recovery Area—The Northwestern Montana Recovery Area's 84,800 km² (33,386 mi²) includes Glacier National Park; the Great Bear, Bob Marshall, and Lincoln Scapegoat Wilderness Areas; and adjacent public and private lands in northern Montana and the northern Idaho panhandle. Wolves in this recovery area were listed and managed an endangered species. Wolves naturally recolonized this area from Canada. Reproduction first occurred in northwestern Montana in 1986 (Ream *et al.* 1989). The natural ability of wolves to find and quickly recolonize empty habitat (Mech and Boitani 2003, p. 17–19), the interim control plan (Service 1988, 1999), and the interagency recovery program combined to effectively promote an increase in wolf numbers (Bangs 1991, p. 7–13). By 1996, the number of wolves had grown to about 70 wolves in 7 known breeding pairs. However, since 1997, the estimated number of breeding pairs and wolves has fluctuated, partly due to actual population size and partly due to monitoring effort. It varied from 4 to 23 breeding pairs and from 49 to 276 wolves (Service *et al.* 2009, Table 4), but generally increased. By the end of 2008, we estimated 276 wolves in 18 breeding pairs in the northwestern Montana recovery area (Service *et al.* 2009, Table 4).

The Northwestern Montana Recovery Area has sustained fewer wolves than the other recovery areas because there is less suitable habitat and it is more fragmented (Oakleaf *et al.* 2005, p. 560; Smith *et al.* 2008, p. 1). Some of the variation in our wolf population estimates for northwestern Montana is due to the difficulty of counting wolves in the area's thick forests. Wolves in northwestern Montana also prey mainly on white-tailed deer, resulting in smaller packs and territories, which lowers the chances of a pack being detected (Bangs *et al.* 1998, p. 878). Increased monitoring efforts in northwestern Montana by Montana Fish, Wildlife and Parks (MFWP) since 2005 were likely responsible for some of the higher population estimates. Wolf numbers in 2003 and 2004 also likely exceeded 10 breeding pairs and 100 wolves, but were not documented simply due to less intensive monitoring those years (Service *et al.* 2009, Table 4). By the end of 2009, this recovery area will contain over 10 breeding pair and 100 wolves for the fourth consecutive year (2005–2008), and probably has done so for the last seven years (2002–2008) (Service *et al.* 2009, Table 4).

Routine dispersal of wolves has been documented among northwestern Montana, central Idaho and adjacent Canadian populations demonstrating that northwestern Montana's wolves are demographically and genetically linked to both the wolf population in Canada and in central Idaho (Pletscher *et al.* 1991, pp. 547–8; Boyd and Pletscher 1999, pp. 1105–1106; Sime 2007, p. 4; Jimenez *et al.* 2008d). Because of fairly contiguous, but fractured suitable habitat wolves dispersing into northwestern Montana from both directions will continue to join or form new packs and supplement this segment of the overall wolf population (Boyd *et al.* 2007; Forbes and Boyd 1996, p. 1082; Forbes and Boyd 1997, p. 1226; Boyd *et al.* 1995, p. 140; vonHoldt *et al.* 2007, p. 19; vonHoldt *et al.* 2008; Thiessen 2007, p. 50; Sime 2007, p. 4; Jimenez *et al.* 2008d).

Unlike YNP or the central Idaho Wilderness complex, northwestern Montana lacks a large core refugium that contains large numbers of overwintering wild ungulates and few livestock. Therefore, wolf numbers may not ever be as high in northwestern Montana as they are in central Idaho or the GYA. However, that population segment has persisted for nearly 20 years, is robust today, and habitat there is capable of supporting over 200 wolves (Service *et al.* 2008, Table 4). State management, pursuant to the Montana State wolf management plan (2003), will ensure this population segment continues to thrive (see Factor D).

Recovery in the Central Idaho Recovery Area—The Central Idaho Recovery Area's 53,600 km² (20,700 mi²) includes the Selway Bitterroot, Gospel Hump, Frank Church River of No Return, and Sawtooth Wilderness Areas; adjacent, mostly Federal lands, in

central Idaho; and adjacent parts of southwest Montana (Service 1994, p. iv). In January 1995, 15 young adult wolves from Alberta, Canada were released in central Idaho (Bangs and Fritts 1996, p. 409; Fritts *et al.* 1997, p. 7). In January 1996, an additional 20 wolves from British Columbia were released (Bangs *et al.* 1998, p. 787). Central Idaho contains the greatest amount of highly suitable wolf habitat compared to either northwestern Montana or the GYA (Oakleaf *et al.* 2005, p. 559). Consequently, the central Idaho area population has grown substantially and expanded its range since reintroduction. As in the Northwestern Montana Recovery Area, some of the Central Idaho Recovery Area's increase in its wolf population estimate was due to an increased monitoring effort by Idaho Department of Fish and Game (IDFG). At the end of 2008, we estimated 914 wolves in 42 breeding pairs in the central Idaho recovery area (Service *et al.* 2009, Table 4). By the end of 2008, this recovery area will have contained at least 10 breeding pair and 100 wolves for 11 consecutive years (1998–2008) (Service *et al.* 2009; Service 2008).

Recovery in the GYA—The GYA recovery area (63,700 km^2 [24,600 mi^2]) includes YNP; the Absaroka Beartooth, North Absaroka, Washakie, and Teton Wilderness Areas (the National Park/Wilderness units); adjacent public and private lands in Wyoming; and adjacent parts of Idaho and Montana (Service 1994, p. iv). The wilderness portions of the GYA are primarily used seasonally by wolves due to high elevation, deep snow, and low productivity in terms of sustaining year-round wild ungulate populations (Service *et al.* 2008, Figure 3). In 1995, 14 wolves representing 3 family groups from Alberta were released in YNP (Bangs and Fritts 1996, p. 409; Fritts *et al.* 1997, p. 7; Phillips and Smith 1996, pp. 33–43). In 1996, this procedure was repeated with 17 wolves representing 4 family groups from British Columbia. Finally, 10 5-month old pups removed from northwestern Montana in a wolf control action were released in YNP in the spring of 1997 (Bangs *et al.* 1998, p. 787). Only 2 of these 10 pups survived past 9 months of their release, but both became breeding adults and their genetic signature is common both in YNP and the GYA (VonHoldt 2008). By the end of 2008, we estimated 449 wolves in 35 breeding pairs in the GYA (Service *et al.* 2008). By the end of 2008, this recovery area had at least 10 breeding pair and 100 wolves for 9 consecutive years (2000–2008) (Service *et al.* 2009; Service 2008).

Wolf numbers in the GYA were stable in 2005, but known breeding pairs dropped by 30 percent to only 20 pairs (Service *et al.* 2006, Table 4). The population recovered in 2006, primarily because numbers outside YNP in Wyoming grew to about 174 wolves in 15 breeding pairs (Service *et al.* 2008). Most of this decline occurred in YNP which declined from 171 wolves in 16 known breeding pairs in 2004 to 118 wolves in 7 breeding pairs in 2005 (Service *et al.* 2005, 2006, Tables 1–4). This decline likely occurred because: (1) Highly suitable habitat in YNP was saturated with wolf packs; (2) conflict among packs appeared to limit population density; (3) fewer elk occur in YNP than when reintroduction took place (White and Garrott 2006, p. 942; Vucetich *et al.* 2005, p. 259); and (4) a suspected 2005 outbreak of disease (canine parvovirus (CPV) or canine distemper (CD)) reduced that years' pup survival to 20 percent (Service *et al.* 2006, Table 2; Smith *et al.* 2006, p. 244; Smith and Almberg 2007, pp. 17–20). By the end of 2007, the YNP wolf population had rebounded and was estimated to contain 171 wolves in 10 breeding pairs (Service *et al.* 2008). In 2008, we saw a relatively high number of wolves killing other wolves and a high mortality rate among pups (this may be due to a disease outbreak, but the NPS will not be sure until winter when park biologists capture wolves and test their blood for antibodies). At the current time the YNP wolf population may be 124 wolves in 12 packs and only 6 breeding pairs (Service *et al.* 2009). Additional significant growth in the National Park/Wilderness portions of the Wyoming wolf population above 200 wolves is very unlikely because suitable wolf habitat is saturated with resident wolf packs. Maintaining wolf populations safely above recovery levels and promoting demographic and genetic exchange in the GYA segment of the NRM area will depend on wolf packs living outside the National Park/Wilderness portions of northwestern Wyoming and southwestern Montana.

For further information on the history of NRM wolf recovery, recovery planning (including defining appropriate recovery criteria), population monitoring (through the end of 2008), and cooperation and coordination with our partners in achieving recovery, see the ''Recovery'' section of the August 1, 2006, 12-month status review (71 FR 43410), Service weekly wolf reports (1995–2008), and the Rocky Mountain Wolf Recovery Interagency Annual Reports (Service *et al.* 1989–2009) at *http://westerngraywolf.fws.gov*.

Summary of the demographic characteristics of the NRM wolf population—In late 2008, the NRM wolf population was estimated to contain about 1,639 wolves in nearly 200 packs (two or more wolves with a territory); 95 of these packs also classified as breeding pairs (packs with an adult male, adult female, and at least 2 pups on December 31). After delisting it will be managed by the States, National Park Service, and Service to average over 1,100 wolves, fluctuating around 400 wolves in Montana, 500 in Idaho, and 200 to 300 in Wyoming. The NRM wolf population is a three part metapopulation, composed of core areas of suitable habitat and refugia in northwestern Montana, central Idaho and the GYA. The most isolated subpopulation in the NRM is the GYA. The territories of persistent breeding pairs in GYA and central Idaho are 160 km (100 mi) apart, but packs and occasionally breeding pairs are often within 100 km (60 mi) of each other. The GYA had 449 wolves as of Dec 31, 2008, but will likely be managed above 300 wolves in portions of Montana, Idaho, and Wyoming in the long term. Central Idaho and northwest Montana are connected by routine dispersal events to the contiguous western Canadian wolf population that contains 12,000 wolves in British Columbia and Alberta. Collectively, the NRM is distinct in the lower 48 United States because it is surrounded by large expanses of unsuitable habitat in Washington, Oregon, Nevada, Utah, Colorado, and the Dakotas.

Average dispersal distance by wolves in the NRM is 100 km (60 mi) and drops off sharply past 300 km (190 mi). Several individuals have gone >600km (>400 mi), but none of these long distant dispersers in the United States are known to have survived long enough to breed. Comparing a model of theoretical suitable wolf habitat in the NRM (Oakleaf *et al.* 2005, p. 559) with the distribution of wolf packs since 2002 indicates most suitable habitat is filled with resident packs (Service *et al.* 2003–2009, Figure 1). The outer boundary of the entire NRM wolf population has not changed much (a minimum convex polygon of 280,000 km^2 (~110,000 mi^2) since 2002 (Figure 1)). Nearly all wolf population growth has occurred within the suitable habitat area within the past 6 years. Suitable habitat is typically forested, public land, seasonally grazed by livestock (mainly cattle), and has abundant wild ungulates (primarily elk, deer, and moose). Wolf packs have not persisted in unsuitable habitat (open

prairie and high desert, more human activity & access, abundant livestock throughout the year, fewer wild ungulates) even under the Act's most protective designation as ''endangered''.

The two major causes of mortality are agency control of problem wolves and illegal killing—each one causing on average about a 10% mortality rate annually (3% unintentional human-caused and 3% natural). Average radio-collared wolf (n = ~940 wolves) annual survival was 74 percent, and varied from 80 percent in national parks and remote wildness areas down to 60 percent in areas more developed by humans (Murray *et al.* 2008; Smith *et al.* 2008). There is an average of just over five pups per pack, but that decreased to an average of about 4 pups by winter. Periodically there are as few as 2 surviving pups in packs in a few localized areas (YNP) due to outbreaks of canine diseases (largely canine distemper). Only about 60% of all wolf packs classified as breeding pairs each year and adult and pup survival, rather than reproduction, was the key determinate on a pack's final status. Those packs that did not qualify either were not surveyed intensively enough to document final status, did not raise at least 2 pups, were not confirmed to contain both an adult male and female on Dec 31, or contact with them was lost (missing, killed, radio-collar loss, etc) before winter. Therefore, the breeding pair estimate represents a minimum and conservative measure of the number of wolf packs that actually meet the breeding pair metric.

The NRM population grew at an average annual rate of 22 percent per year from 1995–2008 (Service *et al.* 2009, Table 4). The NRM population in 2008 grew slowly, indicating it could be approaching the carrying capacity of suitable habitat. Wolf populations regulate their distribution by their social territoriality. Packs defend exclusive areas of 200 to 500 square miles and defend those areas from other lone wolves and packs. Wolves regulate their density depending on food availability. If food is limited pack territories are larger meaning fewer can fit into a limited space. If prey is abundant packs can fulfill their needs in a smaller area and therefore more packs can fit into a smaller area. In the NRM, with its limited suitable habitat and relatively fixed prey base, the wolf population has grown by having wolves in more places within suitable habitat not by having more wolves in the same space or packs beginning to occupy unsuitable habitat. We believe that scientific evidence such as the well documented self regulation of wolf populations by prey density and social strife (Fuller *et al.* 2003); stagnant overall distribution of packs since 2002 (Figure 1); limited amount of suitable habitat in the NRM (Oakleaf *et al.* 2006); high mortality of wolves in unsuitable habitat due to chronic conflicts with people (Smith *et al.* 2008); increase livestock depredations and more control (in many areas); and slowly of wolf population growth rates in recent years (Service *et al.* 2009); all indicate that the NRM wolf population maybe approaching its carrying capacity in suitable habitat. Maintaining wolf numbers above 1,500 maybe difficult as the rate of conflicts per wolf would increase greatly if packs tried to occupy unsuitable habitat. Movement and breeding by dispersing wolves between northwestern Montana, central Idaho and southwest Canada appears common. GYA is the most distinct area, but between radio telemetry data (1995–2008) and genetic analysis (1995–2004) it appears that there is about one natural dispersing wolf entering the GYA per year and a little more than one effective migrant per generation (a 'new' wolf that breeds every four years) in the GYA system. Contemporary statistics for genetic diversity from 2002–2004 for central Idaho, northwestern Montana, and the GYA, respectively are; n = 85, 104, 210; allelic diversity = 9.5, 9.1, 10.3; observed heterozygosity = 0.723, 0.650, 0.708; expected heterozygosity = 0.767, 0.728, 0.738. (vonHoldt *et al.* 2008). These levels have not diminished since 1995. The small differences between expected and observed heterozygosity around 0.70 on a scale of zero (no diversity) to 1 (maximum possible diversity, which is very unlikely to be encountered in a wild population) and high allelic (alleles are the different forms of a gene) diversity averaging over 9 alleles per locus (location of a gene on a chromosome) demonstrate all subpopulations within the NRM wolf populations have high standing levels of genetic variability. By all measures the NRM wolf population is extremely demographically and genetically diverse, will remain so, and is completely biologically recovered.

Public Comments Solicited

In our proposed rule, we requested that all interested parties submit information, data, comments or suggestions (72 FR 6106, February 8, 2007). The comment period was open from February 8, 2007 through May 9, 2007 (72 FR 6106, February 8, 2007; 72 FR 14760, March 29, 2007), from July 6, 2007 through August 6, 2007 (72 FR 36939, July 6, 2007), and from October 28, 2008 through November 28, 2008 (73 FR 63926, October 28, 2008). We also held eight public hearings and eight open houses on the proposal (72 FR 6106, February 8, 2007; 72 FR 14760, March 29, 2007; 73 FR 36939, July 6, 2007). During the 150-day comment period, we received over 520,000 comments including approximately 240,000 comments during our most recent comment period. Comments were submitted by a wide array of parties, including the general public, environmental organizations, sportsman and outfitter groups, agricultural agencies and organizations, and Tribal, Federal, State, and local governments.

Peer Review

In accordance with our Interagency Policy for Peer Review in Endangered Species Act Activities (59 FR 34270, July 1, 1994) and the Office of Management and Budget's (OMB) Final Information Quality Bulletin for Peer Review, we solicited independent review of the science in the proposed delisting rule from eight well-published North American scientists with extensive expertise in wolf biology. All eight peer reviewers submitted comments on the proposed delisting rule during the initial 90-day comment period (72 FR 6106, February 8, 2007; 72 FR 14760, March 29, 2007). Five of those experts reviewed the proposal again after we reopened the comment period (73 FR 36939, July 6, 2007) to allow consideration of Wyoming's revised wolf management plan and its impact upon our proposal. Finally, on October 29, 2008, we provided these eight experts and nine others the opportunity to review and comment on our February 8, 2007 (72 FR 6106) delisting proposal and our October 28, 2008 (73 FR 63926) notice reopening the comment period. None offered any additional comments on the rule making, although several offered comments on our draft genetics MOU (Groen *et al.* 2008).

Generally, the reviewers agreed with our conclusion that the wolf population in the NRM DPS is biologically recovered and is no longer threatened as long as the States adequately regulate human-caused mortality. The reviewers provided many valuable thoughts, questions, and suggestions for improving the document. Issues identified by a majority of reviewers included suggestions to expand the discussion related to: The recovery criteria (connectivity, foreseeable future, metapopulation, and breeding pairs); the adequacy of State wolf management plans and their future commitments; how the DPS boundary and criteria for suitable habitat were developed; options to retain the Act's protections in

portions of Wyoming; and the effect of human-caused mortality on the wolf population.

Summary of Public Comments

We reviewed and considered all comments in this final decision. Substantive comments received during the comment periods and all new information have been addressed below or incorporated directly into this final rule. Comments of a similar nature are grouped together under subject headings in a series of ''Issues'' and ''Responses.''

Technical and Editorial Comments

Issue 1: Numerous technical and editorial comments and corrections were provided by respondents on nearly every part of the proposal. Several peer reviewers and others suggested or provided additional literature to consider in the final rule.

Response 1: We corrected and updated this final rule wherever appropriate and possible. We edited the rule to make its purpose and rationale clearer. We shortened and condensed several sections by not repeating information that was already contained in the references cited. Several other sections were expanded to better explain our position.

The literature used and recommended by the peer reviewers and others has been considered and incorporated, as appropriate, in this final rule. We also reviewed and added literature in development and in press to our reference list when it represents the best scientific and commercial data available. The list of literature cited in this rule will be posted on our Web site (*http://westerngraywolf.fws.gov/*).

Compliance With Laws, Regulations and Policy

Issue 2: Numerous parties suggested that delisting the NRM DPS does not comply with our legal, regulatory, and policy responsibilities.

Response 2: We have carefully reviewed the legal requirements of the Act, its implementing regulations, and relevant case law, all relevant Executive, Secretarial, and Director Orders, Departmental and Service policy, and other Federal policies and procedures. We believe this rule and the process by which it was developed fully satisfies all of our legal, regulatory, and policy responsibilities. Issues relating to specific concerns such as identifying a DPS, using State boundaries as part of the DPS boundary, retaining the Act's protections in significant portions of the NRM DPS, legal criteria for judging adequate regulatory mechanisms, adequacy of the public comment process, clarity of our proposal, and several other legal requirements are each specifically addressed elsewhere in this rule. Furthermore, on December 12, 2008 a formal opinion was issued by the Solicitor of the Department of the Interior, ''U.S. Fish and Wildlife Service Authority Under Section 4(c)(1) of the Endangered Species Act to Revise Lists of Endangered and Threatened Species to 'Reflect Recent Determinations' '' (U.S. DOI 2008). The Service fully agrees with the analysis and conclusions set out in the Solicitor's opinion. This action is consistent with the opinion. The complete text of the Solicitor's opinion can be found at *http://www.fws.gov/midwest/wolf/*.

Issue 3: Some commenters suggested that a new NEPA analysis on the 1995 reintroduction was needed because wolves have exceeded levels analyzed in the 1994 Environmental Impact Statement (EIS). Others suggested NEPA compliance on the delisting was needed for other reasons.

Response 3: The 1994 EIS was limited to the NRM wolf reintroduction efforts and is not applicable to the delisting process. As noted in the proposed rule, NEPA compliance documents, such as environmental assessments or environmental impact statements, need not be prepared in connection with actions adopted pursuant to section 4(a) of the Act (listings, delistings, and reclassifications). A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

Issue 4: Some commenters suggested that we did not adequately consult with Native American Tribes, as required by Secretarial Order 3206 and our Native American Policy.

Response 4: During the development of the proposal and this final rule, we endeavored to consult with Native American Tribes and Native American organizations to provide them information concerning the proposal and gain an understanding of their perspectives. We made additional efforts to contact and inform Tribes during the comment period, including providing the opportunity for informational meetings with Tribal representatives before the open houses and hearings on the delisting proposal. As we have become aware of Native American concerns, we have tried to address those concerns to the extent allowed by the Act, the Administrative Procedures Act, and other Federal statutes. Specifically, we worked closely with and fund the Nez Perce Tribe's wolf management program, assisted the Wind River Tribes in developing a Tribal Wolf Management Plan (Wind River Tribes 2007) that we approved in June 2007, and coordinated with the Salish and Kootenai and Blackfeet Tribes regarding wolf management on their Tribal lands.

Recovery Goals, Recovery Criteria, and Delisting

Issue 5: Some commenters suggested that we should not use numerical quotas in reclassification or delisting decisions for the gray wolf. Commenters offered a multitude of reasons why delisting is warranted/not warranted or premature/overdue.

Response 5: The Act specifies that objective and measurable criteria be developed for recovering listed species. For a detailed discussion of the NRM wolf recovery criteria see the Recovery section. This final delisting determination is based upon the species' status relative to the Act's definition of threatened or endangered and considers potential threats to the species as outlined in section 4(a)(1) of the Act. Population numbers and status provide useful information for assessing the species' vulnerability to these factors. As described in detail in this rule, the species no longer meets the definition of threatened or endangered in all of its range, thus, delisting across most of the NRM DPS is warranted.

Issue 6: Some commenters requested that we further explain the recovery criteria. These commenters expressed confusion over the current recovery goal because recent modifications have not been accomplished through the recovery planning process.

Response 6: The Service's current recovery goal for the NRM gray wolf population is: Thirty or more breeding pairs (an adult male and an adult female that raise at least 2 pups until December 31) comprising 300+ wolves in a metapopulation (a population that exists as partially isolated sets of subpopulations) with genetic exchange between subpopulations (Service 1994; Fritts and Carbyn 1995). Step-down recovery targets require Montana, Idaho, and Wyoming to each maintain at least 10 breeding pairs and 100 wolves by managing for a safety margin of at least 15 breeding pairs and at least 150 wolves in mid-winter. Genetic exchange can be natural or, if necessary, agency managed. The rule now provides a fuller explanation of the recovery goals and their evolution over time (see the Reclassification and Recovery Goals section).

Issue 7: Several commenters used the higher numbers of wolves required for recovery of wolves in the WGL DPS as evidence that the NRM wolf population is too low to delist.

Response 7: The recovery goals for the WGL DPS and the NRM DPS differ because the biological circumstances (such as prey type and density, wolf density, habitat suitability, terrain, other ecological conditions, the history of recovery and planning efforts, and potential for human conflict) in each area differ. The WGL can support more and higher densities of wolves because of high white-tailed deer density, homogenous and more contiguous suitable habitat, different patterns of livestock density, distribution, and management, and different patterns of human access. However, the standards for achieving recovery have the same biological foundation. Each set of recovery goals required a metapopulation structure, numerical and distribution delisting criteria to be exceeded for several years, State plans that would adequately regulate wolf mortality, and sufficient elimination or reduction of threats to the population. The standards for achieving recovery in the WGL DPS and NRM DPS are both scientifically valid and realistically reflect the biological similarities and differences between each area.

Within the NRM DPS, most of the 170,227 km^2 (65,725 mi^2) of suitable habitat for pack persistence is occupied and likely at or above long-term carrying capacity. The occupied portions of the NRM DPS have remained constant since 2002. Given limitations in available suitable habitat for pack persistence, significant expansion of the wolf population into new areas of the NRM DPS is unlikely. We believe maintaining the NRM gray wolf population at or above 1,500 wolves in currently occupied areas would slowly reduce wild prey abundance in suitable wolf habitat. This would result in a gradual decline in the number of wolves that could be supported in suitable habitat. Higher rates of livestock depredation in these and surrounding areas would follow. This too would reduce the wolf population because problem wolves are typically controlled.

The Great Lakes wolf population also grew until it saturated suitable habitat. Wolves in the Minnesota portion of the Great Lakes regions have not increased their distribution and numbers in the past ten years. In both the Great Lakes region and the NRM DPS, we set recovery targets at approximately one-third of carrying capacity, while the States plan to manage at about two-thirds of carrying capacity. We believe the biological carrying capacity of suitable habitat is set by wild prey distribution and density, ability of packs to persist, raise young and provide dispersers back into the population, level of conflict with people, overall rate of reproduction and morality, and a density and distribution of wolves and wolf packs necessary to maintain a viable metapopulation.

Issue 8: Some commenters felt that the 1994 recovery goal was inadequate to ensure the continued viability of the NRM DPS. Specifically, they stated that the 1994 EIS could not properly evaluate the recovery goals because predicting the number of wolves the two then-unoccupied recovery zones might support was not possible. Some thought that the wolf recovery goals should be reevaluated given historic or current wolf numbers and distribution. Others thought that additional protection of the ecosystem, such as reduced livestock grazing, eliminating roads, and increasing restrictions on human development, on which the NRM wolves depend would be necessary to accomplish successful recovery in areas of historic occupancy. Some commenters stated that 2,000 to 6,000 or more wolves were necessary to maintain a viable and recovered wolf population. Others indicated that the wolf population was growing out of control and should be reduced to the minimum recovery goal of 300 wolves in 30 breeding pairs.

Response 8: We do not dispute the fact that the NRM can support a wolf population that is several times higher than the minimum numerical recovery goal necessary to meet the Act's requirements. However, under the Act, species recovery is considered to be the return of a species to the point where it is no longer threatened or endangered. Recovery under the Act does not require restoring a species to historic levels or even maximizing possible density, distribution, or genetic diversity. The Service has reviewed the NRM wolf recovery goal to ensure it is adequate and that it has been fully achieved (see discussion in Recovery section). We have modified it when scientific evidence warranted. We determined that a 3-State wolf metapopulation that requires maintenance of at least 10 breeding pairs and at least 100 wolves in mid-winter per State by managing for a safety margin of at least 15 breeding pairs and at least 150 wolves in mid-winter per State is biologically recovered. Montana and Idaho have committed to maintain the NRM wolf population well above their minimum numerical and distributional share of the NRM wolf population. In Wyoming, the continuation of National Park Service and Service wolf management will assure that Wyoming's share of the NRM wolf population is maintained well above recovery levels. Collectively, these commitments indicate that the entire NRM wolf population is likely to consist of 973 to 1,302 wolves in 77 to 104 breeding pairs (See Recovery Planning and Factor D).

Commenters provided no convincing scientific evidence that at least 2,000 to 6,000 wolves are required in a wolf population for it to be recovered to meet the Act's purposes. Wolf populations in many parts of the world have remained viable at much lower levels unless they were deliberately extirpated by people. Furthermore, not only is the current population of 1,639 wolves far above minimum recovery levels, we have concluded that there is not enough suitable habitat in the NRM DPS to support 2,000 to 6,000 wolves over the long term without tolerating rates of livestock depredation and impacts to big game populations many times higher than has occurred in the past twenty years. Additional habitat protections in suitable habitat will not meaningfully increase carrying capacity of the NRM DPS. Restoration into areas currently considered unsuitable for pack persistence would require massive Federal and State programs to reduce or eliminate livestock on Federal, State, Tribal and, mostly, private property. Such an approach is unnecessary and unwarranted to remove the threat of extinction to the NRM DPS for the foreseeable future. Specifically, we do not believe there is a need for additional habitat protections in the NRMs as the DPS contains sufficient quality and quantity of habitat to maintain a healthy and viable wolf population in the long-term (as discussed in Factor A below). To the extant that a larger population is desired by some to sustain biological viability, the NRM wolf population represents a 650 km (400 mi) southern range extension of a vast contiguous wolf population that numbers over 12,000 wolves in western Canada and about 65,000 wolves across all of Canada and Alaska.

While some commenters felt that the NRM wolf population should be reduced to minimum recovery levels, the Act does not require or authorize the Service to manage a listed species to keep it from surpassing minimum recovery goals. States are also unlikely to accommodate this request as they have agreed to manage for a wolf population at least 50 percent above minimum recovery levels and will likely manage for a population of over 1,000 wolves, well above even this minimum level. Due to smaller safety margins to account for stochastic events, it would require much more intensive and costly monitoring and management to assure the future conservation of a

recovered wolf population that was composed of less than 500 wolves than it would for the greater than 1,000 wolves that will be maintained in the NRM by the States and Service after delisting.

Issue 9: Some commenters questioned the objectivity of the peer review process for the recovery goals.

Response 9: We used an extensive unbiased scientific peer review and public review process and our own expertise to help investigate, and modify as necessary, the recovery goals. We purposely invited reviews from experts with widely divergent philosophies to increase the range of opinions and perspectives. While the comments of some former litigants selected quotes from one end of the bell curve of all the diversity of opinion that was offered on wolf recovery goals to support their perspective (Fallon 2008), a review of the peer review comments in their entirety reveal the wide diversity of opinion (Bangs 2002). We continue to conclude, as did over three-fourths of the experts contacted, that the recovery goal is adequate to ensure wolves in the NRM do not again become threatened or endangered. Additionally, peer reviews of the State wolf management plans and the rulemaking process also confirmed the adequacy of the recovery goals to maintain a recovered wolf population in the NRM DPS. See the discussion in the recovery section for more details.

Issue 10: We received numerous comments related to the recovery objective of having genetic exchange between subpopulations, the isolation of the GYA recovery area, and a perceived failure to meet the recovery goal because of the lack of successful migrants into the GYA. Many commenters expressed opinions on available options to achieve the genetic exchange mentioned in the recovery goal. Some commenters stated that only natural connectivity and gene flow constituted recovery. Some of these individuals believed the July 18, 2008, District Court preliminary injunction order mandated natural connectivity. Numerous commenters opined that agency-managed genetic exchange (moving individual wolves or their genes into the affected population segment) was ''a government dating program'' and did not constitute ''true recovery'' under the Act. Other commenters believed that it was biologically immaterial to wolf population status and genetic vigor whether such exchange occurred solely by natural dispersal or by human-assisted migration management. Others stated that while natural connectivity was desirable to reduce the need for management intervention and cost, human-assisted migration management was an important safeguard, if ever needed. Still other commenters concluded that even if the GYA was totally isolated, biological problems are unlikely to materialize at a meaningful level. These commenters pointed to wolf biology, strong recovery standards for the ecosystem, and actual real world cases of isolated wolf populations to support their position. Opinions and theoretical predictions varied on what level of gene flow was required and if State management practices would increase or decrease those opportunities. Finally, commenters provided thoughts on our draft memorandum of understanding regarding the protection of genetic diversity of NRM gray wolves. Some commenters stated there was no need for the MOU as State wolf management plans already committed potential signees to manage the issue. Other commenters stated that a promise of future action by the States was not legally sufficient to resolve future genetic concerns and allow delisting. Some said the MOU guaranteed genetic connectivity would never threaten the NRM wolf population.

Response 10: Currently, genetic diversity throughout the NRM DPS is very high (Forbes and Boyd 1996, p. 1084; Forbes and Boyd 1997, p. 226; vonHoldt *et al.* 2007, p. 19; vonHoldt *et al.* 2008). Wolves in northwestern Montana and both the reintroduced populations are as genetically diverse as their vast, secure, healthy, contiguous, and connected source populations in Canada; thus, inadequate genetic diversity is not a wolf conservation issue in the NRM at this time (Forbes and Boyd 1997, p. 1089; vonHoldt *et al.* 2007, p. 19). This genetic health is the result of deliberate management actions by the Service and its cooperators since 1995. It is misleading to compare the large, connected, and genetically robust NRM wolf population to very small, very inbred and very isolated wolf populations in order to forecast theoretical problems the NRM population may have with genetic diversity, let alone to an extent that could threaten the viability of the NRM wolf population. Dr. L.D. Mech, the world's foremost authority on wolves, responded to our inquiry about ways we might guarantee to ensure the future genetic health of the NRM wolf population (Fuller *et al.* 2003, p. 189–190; Groen *et al.* 2008) as ''I consider this a nonissue.'' Genetic issues are discussed further in Factor E below.

We agree that a portion of the Service's recovery goal calls for ''genetic exchange between subpopulations'' (see the Recovery section above). Genetic exchange was also a major focus of the July 18, 2008, District Court preliminary injunction order. The Recovery section of this rule now clarifies the Service's recovery goal, including the genetic exchange portion of it, to correct any misunderstandings or alternative interpretations of what constitutes biological wolf recovery in the NRM. This section provides wording from past documents to demonstrate that the Service recovery goal was never dependent on natural connectivity or proven multi-generation genetic exchange within any recovery segment. Instead, the primary purpose of this portion of the recovery goal was to ensure that no recovery area was totally isolated. The 1994 EIS (Service 1994, p. 6–7) defined a ''Recovered wolf population'' as ''10 breeding pairs of wolves in each of 3 areas for 3 successive years with some level of movement between areas.'' Natural dispersal and successful reproduction of radio-collared wolves has been documented between all three subpopulation.

Some commenters provided scientific papers that dealt with potential wildlife conservation problems resulting from low genetic diversity and inbreeding, or that such problems were unlikely to be resolved by only one immigrant. We appreciate those papers and perspectives and recognize low genetic diversity can have costs to population health. However, the problems resulting from low genetic diversity and inbreeding cited were in wildlife populations that started from very few founders and remained at low levels for long periods of time, remained isolated, existed in small fragmented habitats, and no management was taken to resolve problems. But even those populations grew very rapidly in suitable habitat after human-caused mortality was regulated. These examples have virtually no relevance to the NRM wolf population. The NRM wolf population is large. It started from many diverse founders, grew rapidly, has very high genetic diversity, is not isolated, and it is attached to a Canadian population composed of 12,000 wolves. Wolves in the NRM live in 3 genetically and demographically connected areas of secure suitable habitat covering an area of nearly 240,000 km^2 (100,000 mi^2) and management actions have been and will continue to be used to resolve any actual genetic problems that might develop in the future. In addition, the purpose of the Act is not to maximize genetic diversity or to quibble about

genetic theory or the results of theoretical models and their assumptions. The Act is intended to prevent species from becoming extinct and clearly the NRM wolf population will never be threatened by low genetic diversity, genetic drift, or inbreeding. See Factor E for a detailed discussion of this issue.

Implementation of the recently finalized Genetics MOU (Groen *et al.* 2008), which was improved by public and peer review comment, makes it even more unlikely that agency-managed genetic exchange would be necessary in the foreseeable future. This MOU recognizes that genetic diversity is currently very high throughout the NRM DPS and commits to establish and maintain a monitoring protocol to ensure that necessary levels of gene flow occur so that the population retains high levels of genetic and demographic diversity (Groen *et al.* 2008). The number of effective migrants needed to maintain genetic diversity in any one recovery area is a function of its overall population size, the number of dispersers that successfully breed, and the demographic parameters of that population segment. As noted above, we believe current levels of natural connectivity are sufficient to address any theoretical genetic issues. However, we recognize work on this issue is ongoing. The MOU ensures this issue will be appropriately managed into the foreseeable future by the NRM DPS's State and Federal partners as new information comes to light (Groen *et al.* 2008). Should genetic or demographic issues ever materialize that could threaten the NRM wolf population, an outcome we believe is extremely unlikely, the MOU ensures States will implement techniques to facilitate agency-managed genetic exchange (moving individual wolves or their genes into the affected population segment) (Groen *et al.* 2008).

We believe Wyoming must institute additional protections to facilitate natural genetic exchange. Specifically, the State's regulatory framework should minimize take of non-problem wolves in all suitable habitat and across all of Wyoming's potential migration routes among NRM subpopulations. Statewide trophy game status will assist in this regard as migrating wolves use the current predator area. This measure is particularly important during peak dispersal, breeding, and pup rearing periods. In addition to requiring that Wyoming manage for at least 15 breeding pairs and at least 150 wolves in mid-winter in their State, Wyoming must also manage for at least 7 breeding pairs and at least 70 wolves in Wyoming outside the National Parks. Such requirements are necessary to provide adequate buffers to prevent the population from falling below recovery levels. This secondary goal will provide dispersing wolves more social openings and protection from excessive human-caused mortality. This will also maintain a sufficiently large number of wolves in the GYA; larger population size is a proven remedy to genetic inbreeding. Until Wyoming develops adequate regulatory mechanisms, continued Federal management of the Wyoming wolf population will maximize potential for genetic exchange.

Future Wolf Numbers

Issue 11: Many commenters pointed out that the States will manage for fewer wolves than currently exist. Some commenters thought that fewer wolves would reduce the number of dispersing wolves and limit natural connectivity among the subpopulations. Others recommended that we recognize and take into account the fact that wolf numbers can fluctuate dramatically.

Response 11: The delisted NRM DPS wolf population is likely to be reduced from its current levels of around 1,639 wolves by State management. Below carrying capacity (the current carrying capacity of suitable habitat in the NRM may be around 1,500 wolves), the population is likely to continue to reproduce at high rates. However, attempts to maintain the population above 1,500 wolves may be difficult because suitable habitat will be fully occupied and packs attempting to colonize unsuitable habitat would cause chronic conflict with livestock. Regardless, wolf populations in the three States containing most of the occupied and most of the suitable habitat in the NRM DPS will be managed for at least 15 breeding pairs and at least 150 wolves so that the population never goes below recovery levels. The entire NRM wolf population is likely to consist of 973 to 1,302 wolves in 77 to 104 breeding pairs. Specifically, State projections indicate the NRM wolf population in Montana and Idaho will likely be managed for around 673 to 1,002 wolves in 52 to 79 breeding pairs (See Recovery Planning and Factor D). In Wyoming, the Act's protections will remain in place, thus, Wyoming is likely to maintain a wolf population of about 300 wolves in 22 breeding pairs. We believe maintenance well above the minimum recovery goal is more than sufficient to maintain wolf recovery in the NRM.

We recognize that the planned reduction in overall population numbers could reduce dispersal and connectivity among subpopulations. If the population is managed for over a thousand wolves, as expected, we believe the impact on dispersal and connectivity will be negligible. If the population is managed to the minimum recovery target of 150 wolves per State, dispersal would be noticeably impacted, which could require costly and intensive management to mitigate. However, even when wolf populations were low in number and throughout the period when mortality averaged 23 percent of the population annually, some dispersal events occurred between all three recovery areas. We expect some dispersal will continue regardless of the number managed for. State and Tribal management in Montana and Idaho, in combination with continued Federal management of Wyoming, will continue to focus on this issue, especially in regards to the GYA. We believe these efforts will ensure sufficient levels of connectivity among the subpopulations. Should genetic issues that could threaten the population ever materialize, an outcome we believe is extremely unlikely, agency-managed genetic exchange will be used to correct the issue.

We and our State partners recognize that all wildlife populations, including wolves, can fluctuate widely over a relatively short period of time. By managing for at least 50 percent above the minimal recovery levels, and likely for over one thousand wolves, State and Federal management provide an adequate safety margin. This margin, combined with the State's commitment to adaptively manage the species as needed, adequately addressed concerns about population fluctuations.

Additional Recovery Efforts

Issue 12: Several commenters thought that the Service should have modified our recovery planning and implementation efforts after revising the listing to a single lower 48-State listing in 1978. Commenters requested we develop a single recovery plan for the lower 48-State listed entity before delisting any portion of it. Other commenters thought that the Service should use subspecies to identify DPSs across the gray wolf's historical range, and these DPSs should replace or supplement the current recovery zones. Still others expressed their opinion that additional recovery efforts across the entire lower 48-States were unwise and unnecessary. The adjacent States of California, Nevada, Colorado, Utah, Oregon, and Washington were mentioned most frequently for additional recovery programs. Other

commenters recommended wolves be reintroduced into places such as Central Park in New York City or the National Mall in Washington, DC.

Response 12: We believe possible future wolf recovery efforts are beyond the scope of this rulemaking as such actions are not necessary to ensure that the NRM DPS remains unlikely to become endangered in the foreseeable future throughout all or a significant portion of its range.

Nevertheless, let us clarify our position on this issue. As noted in the 1978 reclassification rule, we replaced the previous subspecies listings with a single conterminous 48-State entity in order to ''most conveniently'' handle the gray wolf listing. Our 1978 reclassification rule provided assurances that we would continue to recognize valid biological subspecies for purposes of our research and conservation programs (39 FR 1171, January 4, 1974). The NRM DPS approximates the U.S. historic range of the purported NRM gray wolf subspecies (*C. l. irremotus*) (Service 1980, p. 3; Service 1987, p. 2; 39 FR 1171, January 4, 1974). We never intended, nor do we think it is realistic, to recover the species across the entire lower 48-States.

Finally, we believe we have satisfied our statutory responsibilities for recovery planning. Section 4(f)(1) of the Act instructs us to develop plans for the conservation and survival of threatened and endangered species. The Act further states that priority be given to species that are most likely to benefit from such plans. To this end, we have prioritized gray wolf recovery planning efforts to focus on the NRM, the Great Lakes Region, and the Southwest. We completed a recovery plan for the NRM in 1980 and revised it in 1987. In the Great Lakes Region, we completed a recovery plan in 1978 and revised it in 1992. In the Southwest, a recovery plan was completed in 1982. Any additional planning is discretionary. At this time the Service's resources will be focused on delisting the recovered wolf populations in the Midwest and NRM, and recovering gray wolves in the southwest and red wolves (*Canis rufus*) in the southeast.

Issue 13: Several commenters thought that wolf recovery should require recolonization of all historical range or, at least, the portions of the historical range that could be made suitable. Some recommended that wolves remain listed to promote wolf restoration within unoccupied portions of the species' historic range, both in and beyond the NRM DPS. Others indicated that the concepts of resiliency, redundancy, and representation need to be addressed over a much broader area. Some believed that our interpretation of recovery led us to focus on occupied habitat and controlling excessive rates of human-caused mortality rather than ''true recovery.'' It was stated that ''true recovery'' requires natural connectivity or linkage, protection and enhancement of existing population levels, widespread habitat protection and restoration, and protective regulatory mechanisms.

Response 13: We believe these recommendations would expand the purpose of the Act. The Act defines conservation as the use of all methods and procedures necessary to bring any endangered or threatened species to the point where the measures provided pursuant to the Act are no longer necessary. According to our implementing regulations (50 CFR 424.11), when a species no longer meets the definition of an endangered or threatened species under the Act, it is recovered, and we are to delist it.

Restoration of historically occupied areas can play a role in achieving the goal of recovery. In this case, occupancy has been restored and will be maintained across the vast majority of the suitable habitat with the NRM DPS. Maintained occupancy across most suitable habitat in Montana and Idaho ensures that the NRM DPS remains unlikely to become endangered in the foreseeable future throughout all of its range. Continued Federal protections in Wyoming ensure this significant portion of the NRM DPS will be maintained. Occupancy across large portions of the historical range, unless required to preclude the NRM DPS from again becoming threatened or endangered, are beyond the requirements of the Act.

Reintroducing wolves to areas of highly unsuitable habitat outside the NRM was not considered relevant to this rule. Furthermore, most historic wolf habitat in the contiguous United States has been so modified by people that it is currently unsuitable for wolves.

Resiliency, redundancy, and representation (described in detail in the Conclusion of the 5-Factor Analysis section below) are important factors in the long-term conservation status of any species (Shaffer and Stein 2000). Within the NRM DPS, each of the States and each of the recovery areas meaningfully contributes to its resiliency, redundancy, and representation. Across the lower 48-States, the three wolf populations in the lower 48-States (WGL DPS, NRM DPS, and Mexican wolf) provide the necessary resiliency, redundancy, and representation. These three populations also represent all the genetic diversity remaining in wolves south of Canada after their widespread extirpation during European colonization (Leonard *et al.* 2005, p. 9). Additionally, the species remains abundant in many areas of the northern hemisphere. Collectively, this information shows that these principles of conservation biology are satisfied.

We dispute the assertion that we have inappropriately focused our recovery efforts on occupied habitat and mortality control. In fact, we have focused recovery efforts on wolf population levels, distribution, habitat, connectivity, all forms of mortality, wolf/human conflicts, diseases and parasites, predation, human attitudes, genetics, and dispersal (Service *et al.* 2002–8). We have worked to maintain public tolerance of wolves by limiting damage to private property. These recovery efforts led to significant increases in wolf numbers and range, allowing wolves to reoccupy habitats they were absent from since the 1930s. Our efforts also provided demographic, genetic, and habitat security. Wolf packs now occupy most of the large blocks of suitable habitat within the DPS. This comprehensive approach to recovery will be continued under State management in Montana and Idaho in the future. Additional recovery actions necessary to achieve a more widely distributed and numerically abundant population are not necessary to meet the definition of recovered under the Act.

Issue 14: Many commenters thought that we failed to recognize the ecological importance of trophic cascades (the ripple effect in predator, herbivore, plant, and scavenger communities caused by restoring a keystone species like wolves) and ecological effects emanating from wolf restoration in the NRM. Some commenters stated that the Act mandates that a species be ''ecologically effective.'' Still other commenters thought we should use an ''ecosystem approach'' when implementing recovery. Finally, some commenters suggested delisting does not fulfill parts of the Service mission which includes, ''working with others, to conserve, protect and enhance fish, wildlife, and plants and their habitats for the continuing benefit to the American people.''

Response 14: We recognize that wolf recovery appears to have caused trophic cascades and ecological effects that affect numerous other animal and plant communities, and their relationships with each other. These effects have been most pronounced in pristine areas, such as in YNP. While these effects likely

still occur at varying degrees elsewhere, they are increasingly modified and subtle the more an area is affected by humans (Smith *et al.* 2003, pp. 334–338; Robbins 2004, pp. 80–81; Campbell *et al.* 2006, pp. 747–753; Hebblewhite *et al.* 2005, p. 2135; Garrott *et al.* 2005, p. 1245). While some believe we should stall delisting until these cascading ecological effects are restored throughout the DPS or beyond, this approach is not a requirement of the Act. Instead, when a species no longer meets the definition of an endangered or threatened species under the Act, it is recovered, and we are to delist it. Similarly, the Act does not require that we achieve or maintain ''ecological effectiveness'' (i.e., occupancy with densities that maintain critical ecosystem interactions and help ensure against ecosystem degradation) (Soule *et al.* 2003, p. 1239).

Service policy intends that we apply an ecosystem approach in carrying out our programs for fish and wildlife conservation (National Policy Issuances 95–03 and 96–10; 59 FR 34274, July 1, 1994). The goal of such an approach is to strive to contribute to the effective conservation of natural biological diversity through perpetuation of dynamic, healthy ecosystems when carrying our various mandates and functions. Preserving and recovering endangered and threatened species is one of the more basic aspects of an ecosystem approach to conservation. Successful recovery of a rare species requires that the necessary components of its habitat and ecosystem be conserved, and that diverse partnerships be developed to ensure the long-term protection of those components. Thus, the recovery success demonstrated for gray wolves, a keystone or ''highly interactive species'' (as defined by Soule *et al.* 2003), also is a demonstration of the ecosystem approach.

Finally, we believe delisting portrays successful adherence to our mission statement. Gray wolf recovery programs involve many partners in the private and public sector, at all levels of government, and include numerous other State and Federal agencies. The wolf recovery successes described in this rule resulted from working with others to conserve, protect, and enhance gray wolf populations in the NRM. That success has now reached a point where the NRM wolf population, except Wyoming, no longer qualifies for protection under the Act, so we are delisting most of the NRM DPS. Long-term maintenance of a recovered gray wolf population will provide a continuing benefit to the American people.

Issue 15: Some commenters suggested that we should delist gray wolves in areas outside of the proposed DPS because: Wolves are common elsewhere (in other areas of the lower 48 States or in Alaska and Canada); wolves have recovered (in that area or elsewhere); wolves are extirpated in many areas and could be delisted on the basis of extinction in those areas; keeping wolves listed where there is little or no suitable habitat results in irresolvable conflicts; and a State can manage a resident species better than the Federal government.

Response 15: The Federal status of wolves under the Act outside of the NRM DPS is beyond the scope of this action. An evaluation of these areas for either delisting or additional recovery efforts will be forthcoming in a separate effort.

Identifying the NRM Distinct Population Segment

Issue 16: Some commenters suggested that we improperly recognized the NRM DPS. Some asserted that the Service may not identify a DPS within a broader pre-existing listed entity for the purpose of delisting the DPS. Other held the opposite view, that a DPS-level delisting was allowed. These commenters also noted that the NRM population met the DPS policy's criteria for discreteness and significance, thus, should be recognized as DPS. They suggested that precluding delisting until entire lower 48-State entity was recovered would punish the States that had recovered the species. Some opined that a DPS could not be created and delisted in the same listing action.

Response 16: As described above, we have determined the NRM DPS is biologically based, appropriate, and was developed in accordance with the Act and the Distinct Vertebrate Population Segment Policy. Our ability to identify a DPS within a broader pre-existing listed entity was the subject of a recent decision of the U.S. District Court for the District of Columbia (*Humane Society of the United States* v. *Kempthorne*, Civil Action No. 07–0677 (PLF) (D.D.C., Sept. 29, 2008)). This order remanded and vacated our February 7, 2008, final rule that identified the WGL DPS of gray wolves and determined that these wolves should be delisted (72 FR 6052). The court found that the Service had made that decision based on its interpretation that the plain meaning of the Act authorizes the Service to create and delist a DPS within an already-listed entity. The court disagreed, and concluded that the Act is ambiguous as to whether the Service has this authority. The court accordingly remanded the final rule so that the Service could provide a reasoned explanation of how its interpretation is consistent with the text, structure, legislative history, judicial interpretations, and policy objectives of the Act.

While the Service acknowledges that the ESA is arguably ambiguous on the ''precise question'' posed by the court, it notes that the court's question does not accurately describe what we did in the Final Rule. What we actually did, under the precise language of the Act, was to determine, pursuant to section 4(a)(1), that gray wolves in the Western Great Lakes area constituted a DPS and that the DPS was neither endangered nor threatened, and then revised the list of endangered and threatened species, pursuant to section 4(c)(1), to reflect those determinations. Our conclusion is that we had clear authority to make the determinations and the revisions. We did not delist a previously unlisted species; rather, we revised the existing listing of a species (the gray wolf in the lower 48 States) to reflect a determination that a sub-part of that species (the Western Great Lakes DPS) was healthy enough that it no longer needed the ESA's protections and such action is the same as the action we are taking today regarding the NRM DPS when we determine that wolves in most of the NRM DPS no longer need ESA protections and that the List of Threatened and Endangered Wildlife should be revised to reflect the current status of these wolves. Our authority to make these determinations and to revise the list accordingly is found in the precise language of the ESA. Moreover, even if that authority was not clear, our interpretation of this authority to make determinations under section 4(a)(1) and to revise the endangered and threatened species list to reflect those determinations under section 4(c)(1) is reasonable and fully consistent with the ESA's text structure, legislative history, relevant judicial interpretations, and policy objectives.

As stated previously, on December 12, 2008, a formal opinion was issued by the Solicitor, ''U.S. Fish and Wildlife Service Authority Under Section 4(c)(1) of the Endangered Species Act to Revise Lists of Endangered and Threatened Species to 'Reflect Recent Determinations' '' (U.S. DOI 2008). This opinion represents the views of the Service and fully supports the Service's position that it is authorized in a single action to identify a DPS within a larger listed entity, determine that the DPS is neither endangered nor threatened, and then revise the List of Endangered and

Threatened Wildlife to reflect those determinations. The opinion also notes that, although the term ''delist'' is not used in the Act, it is used extensively in the regulations implementing the section 4 listing provisions of the Act, such as 50 CFR 424.11(d). As explained in footnote 8 to the Solicitor's opinion, ''As used by FWS, ''delisting'' applies broadly to any action that revises the lists either to remove an already-listed entity from the appropriate list in its entirety, or to reduce the geographic or taxonomic scope of a listing to exclude a group of organisms previously included as part of an already-listed entity (as was the case with the Western Great Lakes DPS of gray wolves).'' The Service fully agrees with the analysis and conclusions set out in the Solicitor's opinion and this action is consistent with the opinion. The complete text of the Solicitor's opinion can be found at *http://www.fws.gov/midwest/wolf/*.

In regard to the NRM wolves, such an approach is further supported by the fact that the DPS is consistent with over 30 years of recovery efforts in the NRMs in that: (1) The DPS approximates the U.S. historic range of the NRM gray wolf subspecies (*C. l. irremotus*) (Service 1980, p. 3; Service 1987, p. 2) which was the originally listed entity in 1974 (39 FR 1171, January 4, 1974); (2) the DPS boundaries are inclusive of the areas focused on by both NRM recovery plans (Service 1980, pp. 7–8; Service 1987, p. 23) and the 1994 environmental impact statement (EIS) (Service 1994, Ch. 1 p. 3); and (3) the DPS is inclusive of the entire Central-Idaho and Yellowstone Non-essential Experimental Population areas (59 FR 60252, November 22, 1994; 59 FR 60266, November 22, 1994; 50 CFR 17.84 (i) & (n)).

Issue 17: Some commenters suggested that the NRM gray wolf population is not a DPS because all populations in the lower 48 States were once connected. Thus, the population should not be considered discrete.

Response 17: A comprehensive evaluation of the NRM gray wolf population's discreteness is included in the ''Analysis for Discreteness'' section of the rule above. Historical distribution has no bearing on the NRM population's current discreteness. The boundaries of the NRM DPS consider likely dispersal distances and surrounding unsuitable habitat. We believe a continuous uninterrupted population throughout the lower 48-States, as existed historically, is not achievable. The best scientific and commercial information available indicates the NRM population will remain markedly separated from other gray wolf populations in the lower 48-States. Occupancy in the intervening areas is unsustainable because the areas have been too modified by people for wolves to survive.

Issue 18: Several people stated that the DPS policy is to be used only in listing decisions and that using it in a delisting decision violates Congressional intent and the legislative and statutory structure of the Act.

Response 18: The Act, its implementing regulations, and our DPS policy provide no support for this interpretation. Section 4(a)(1) of the Act directs the Secretary of the Interior to determine whether ''any species'' is endangered or threatened. Numerous sections of the Act refer to adding and removing ''species'' from the list of threatened or endangered plants and animals. Section 3(15) defines ''species'' to include any subspecies ''* * * and any DPS of any species of vertebrate fish or wildlife * * *'' The Act directs us to list, reclassify, and delist species, subspecies, and DPSs of vertebrate species. It contains no provisions requiring, or even allowing, DPSs to be treated in a different manner than species or subspecies when carrying out the listing, recovery, and delisting functions mandated by section 4. Furthermore, our DPS Policy states that the policy is intended for ''the purposes of listing, delisting, and reclassifying species under the Act'' (61 FR 4722, February 7, 1996), and that it ''guides the evaluation of distinct vertebrate population segments for the purposes of listing, delisting, and reclassifying under the Act'' (61 FR 4725, February 7, 1996).

These comments also overlook the untenable situation that would arise if DPSs could be listed, but could never be delisted, after they have been successfully recovered. Clearly Congress did not envision such an outcome when amending the definition of species to include vertebrate DPSs.

Issue 19: Some commenters pointed out that the recognition of the NRM DPS created a remnant population. Some commenters suggested this violates the Act as the Act allows us to ''consider listing only an entire species, subspecies, or DPS'' (*Alsea Valley Alliance* v. *Evans*, 161 F. Supp. 2d 1154, 1162 (D. Or. 2001)); therefore, we cannot declare part of a listed species a DPS without also identifying the remaining listed species as DPS(s).

Response 19: While in some situations it may be appropriate to recognize multiple DPSs simultaneously, the Act does not require it. This flexibility allows the Service to subsequently list or delist additional DPSs when additional information becomes available or as the conservation status of the taxon changes. Importantly, a court stated that the Act allows this flexibility. In *National Wildlife Federation* v. *Norton* (385 F. Supp. 2d 553, 565 (D. Vt. 2005), the court found that ''Nowhere in the Act is the Secretary prevented from creating a 'non-DPS remnant,' especially when the remnant area was already listed * * *'' Our current identification of a NRM DPS, while retaining the remaining other wolves listed as endangered or nonessential experimental, is consistent with this aspect of the District Court's ruling.

Furthermore, just as the NRM DPS is discrete from the remaining populations in the lower 48 States, the remaining populations are discrete from the NRM DPS. The amended lower 48 State listing is discrete from Canadian populations of gray wolf as delineated by the United States/Canadian international boundary, with significant differences in control of exploitation, management of habitat, conservation status, and regulatory mechanisms. The amended lower 48 State listing is significant in that its loss would result in a significant gap in the range of the taxon (*C. lupus*). Therefore, the amended lower 48 State listing is discrete and significant.

Issue 20: Some commenters felt that a wolf dispersing outside of the DPS boundaries (e.g., into Colorado) may create confusion among State, Federal, and Tribal agencies regarding the status of that wolf. To address this confusion, some believed that any wolf originating from the NRM DPS should be considered part of that DPS, regardless of where it is geographically.

Response 20: Consistent with Section 4(c) of the Act, the status of individual members of a species, subspecies, or DPS is dependent on their geographic location. We used easily identifiable boundaries, such as the center line of major highways or State borders, to minimize management confusion. Once this rule goes into effect, if a wolf goes beyond the NRM DPS boundary, it attains the listing status of the area it has entered (i.e., endangered in much of the lower 48 States, except where listed as nonessential experimental or delisted). Similarly, if a wolf enters the NRM DPS, except Wyoming, it would not be listed and would be managed according to the relevant State management plan. If a wolf enters Wyoming, it will be regulated as a non-essential, experimental population per 50 CFR 17.84 (i) and (n). State and Federal agencies across the region are aware of and understand the

management implications of this action. While we believe that future dispersal and conflicts outside the DPS will be rare, we will continue to work with any affected States or Tribes to resolve them.

Issue 21: Numerous commenters suggested the boundary of the DPS was improperly developed. Some commenters suggested the DPS should have been larger, while others thought it should have been smaller. Some opined that the size of the NRM DPS prevents wolf dispersal outside the DPS to other areas of suitable habitat, thus the unsuitable habitat at the edges of the DPS became a barrier to dispersal. Some believe that because the boundaries were mainly highways or State borders, they were arbitrary and not based on sound biological principles or natural features like rivers. Montana recommended a DPS of only Montana, Idaho, and Wyoming based on the presence of a wolf population and State regulations guiding post-delisting wolf management. The adjacent States requested that the NRM DPS boundary be changed to include most of Utah, Nevada, and Oregon, western North and South Dakota, and none of Washington.

Response 21: The boundary of the NRM DPS was determined by analyzing the distribution of potentially suitable and unsuitable habitat for wolves in the NRM and the documented dispersal distances of radio-collared wolves. These factors are the most likely to influence a split between the NRM DPS and other potential areas of occupancy. A smaller DPS might split the biological entity. A larger DPS might split a neighboring biological entity, should one ever be established.

The boundary of the DPS was determined by the dispersal distances of wolves. The Service does not proactively prevent wolf dispersal in Montana, Idaho, or Wyoming. Likewise, Washington and Oregon State laws are, in general, as protective of wolves as the Act's experimental population regulations so the potential dispersal of wolves in those states is unaffected by delisting. Utah law also protects dispersing wolves, but such a small part of Utah will be delisted that it is unlikely to significantly affect dispersal into the endangered parts of Utah. Delisting simply means the federal legal framework for wolf conservation transitions to State law and regulation, not that wolves become unprotected. We conclude that the DPS boundary is unlikely to significantly affect the overall rate or survival of long distance dispersers. However, it will still remain unlikely that enough wolves will disperse outside the NRM DPS to start new populations because of the distances involved and the large amount of contiguous unsuitable habitat that is between NRM wolf breeding pairs and the closest theoretical suitable habitat capable of supporting wolf breeding pairs outside the NRM DPS.

According to our DPS policy, an artificial or manmade boundary (such as Interstate, Federal, and State highways, State borders) may be used as a boundary of convenience in order to clearly identify the geographic area included within the DPS. We believe such use of easily understood boundaries will promote public understanding of the listing and ease in future management. In this case, the NRM DPS boundaries were defined along easily identifiable boundaries that represent the most appropriate DPS for this population (see DPS discussion in this rule for our rationale). While some suggested ''more biological'' boundaries like rivers or geological features, we do not believe such boundaries are of any greater biological meaning to wolves given their ability to cross such geographic features. In our view, the biological factors considered are likely to have the greatest influence on separation among populations.

Defining Suitable Habitat

Issue 22: Some thought we should explain why some historically occupied lands were excluded from our definition of suitable habitat. Many commenters questioned our finding that peripheral portions of the DPS were insignificant. These commenters felt that this approach prevents further recovery by prematurely delisting unoccupied areas. These commenters requested that delisting in unoccupied areas should be precluded until threats are resolved in these areas and occupancy is secured. These commenters also contended that delisting such areas severed critical dispersal corridors. Some commenters cited wolf establishment in ''unsuitable'' portions of Oregon as evidence our position was in error.

Response 22: Our identification of suitable habitat was based on the best scientific and commercial information available regarding pack persistence. Many areas of historic wolf habitat are no longer capable of supporting packs. Most of these areas have been so modified by human activities as to be unsuitable for wolves. This issue is discussed in more detail in Factor A below.

We based our predictions of suitable and unsuitable habitat on the best scientific and commercial information as of the time of this rule. Oakleaf *et al.'s* (2006, p. 558) depiction of suitable habitat has been remarkably accurate when compared to wolf pack distribution over the past 6 years (Service *et al.* 2008, Figure 1). Carroll's *et al.* 2006) model was similar to Oakleaf's and it predicted some suitable habitat in northeast Oregon. We expect that someday a wolf pack will be confirmed in that area.

A hundred years ago, people decided that wolves cannot live near livestock or people and so they exterminated all the wolves. Today, some people use the belief that wolves cannot live near livestock as a justification for removing all the livestock. It is true that wolves are such resilient animals that unsuitable habitat (e.g., mainly private prairie used for livestock grazing or human developments) could be transformed to suitable habitat by removing livestock, people, and human developments. However, this scenario is not realistic or necessary because far more than enough suitable habitat (e.g., mainly federal parks or forests containing abundant wild ungulates) exists to support many times over the minimum requirements of a recovered and viable wolf population. Such extreme measures are not reasonable and are not warranted or necessary to achieve wolf recovery in the NRM.

Issue 23: Some commenters felt that we improperly considered more than biological criteria in defining suitable habitat by allowing the definition of suitable to consider human tolerance. Others stated that we misinterpreted the habitat suitability models because they only present probabilities of successful occupation by wolves under current conditions.

Response 23: Suitable habitat for pack persistence considered a variety of factors, including, but not limited to, mortality. Suitable wolf habitat in the NRM is generally characterized as public land with mountainous, forested habitat that contains abundant year-round wild ungulate populations, low road density, low numbers of domestic livestock that are only present seasonally, few domestic sheep, low agricultural use, and few people. Unsuitable wolf habitat is not capable of supporting persistent packs. In the NRM, unsuitable habitat is generally considered to have the characteristics: 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. When wolves occur in places with high levels of human activity, they experience an increased mortality risk. The level of impact from such mortality is directly related to the

location and numbers of humans and their activities. We recognize that areas unsuitable for pack persistence may still be occasionally traversed by wolves. Thus, some minimal level of protection is necessary in these areas.

In terms of suitable habitat models, we recognize that none of the available models are exact indicators of what is ''suitable.'' Each model only identifies areas with a 50 percent or greater chance of being suitable. Thus, we made our determination based upon a number of factors including, but not limited to, these models.

Foreseeable Future

Issue 24: Some folks believed that limiting foreseeable future to 30 years was inappropriate.

Response 24: We revised our definition of foreseeable future to take into account the variability of what is foreseeable for each threat factor. For some threat factors, a time horizon of more than 30 years may be appropriate. For example, for our consideration of genetics (discussed under Factor E below), we reviewed a paper that looked 100 years into the future (vonHoldt *et al.* 2007).

Potential Threats to the NRM DPS

Issue 25: A number of commenters disputed our analysis of the five listing factors, suggesting alternative scenarios where the NRM wolf population would be threatened in the future.

Response 25: We updated and augmented the final rule's five-factor analysis to address specific issues raised. Our analysis of all of meaningful potential threat factors revealed that: (1) The NRM DPS is not threatened or endangered throughout ''all'' of its range (i.e., not threatened or endangered throughout all of the DPS); but (2) the Wyoming portion of the range represents a significant portion of range where the species remains in danger of extinction because of inadequate regulatory mechanisms. Thus, this final rule removes the Act's protections throughout the NRM DPS except for Wyoming. Wolves in Wyoming will continue to be regulated as a non-essential, experimental population.

Issue 26: Some commenters felt that we did not fully evaluate or acknowledge the potential impacts from oil and gas development or other human development on the wolf population. Other habitat issues in the NRM that required additional consideration included rapid human population growth and the resulting increase in houses, roads, recreation, and wolf/human conflicts.

Response 26: These issues are now considered under Factor A below.

Issue 27: Some commenters thought that the Service should reduce the future threat to wolves by requiring that livestock be reduced or eliminated on public lands.

Response 27: Wolves and livestock, primarily cattle and horses, can live near one another for extended periods of time without significant conflict if agency control prevents the behavior of chronic livestock depredation from becoming widespread in the wolf population. Through active management, most wolves learn that livestock can not be successfully attacked and do not view them as prey. However, when wolves and livestock mix, some livestock and some wolves will be killed. Furthermore, when wolves learn to attack livestock, the behavior is quickly learned by other wolves if it is not stopped. Because wild ungulates commonly winter on private property, even wolves that prey exclusively on wild ungulates will be in proximity to livestock during some portion of the year. Wolf recovery has occurred and will be maintained without substantial modification of traditional western land-use practices and without requiring the removal of livestock from public grazing allotments. Public lands in the NRM can have both large predators and seasonal livestock grazing. Livestock grazing practices on public and private lands do not need to be modified because wolf recovery is not threatened by the current levels of these activities. We believe State management will continue to successfully balance traditional livestock grazing practices, open space, and wolf conservation. If the wolf population were to expand significantly beyond its current outer boundaries, we anticipate that the level of livestock depredation would significantly increase. See Response 22.

Issue 28: Some commenters were concerned about humane treatment of wolves and were opposed to certain methods of take, particularly aerial gunning and poisoning. Numerous parties suggested that the Service should not allow public hunting of wolves. Others suggested that we should require the use of non-lethal control tools to reduce conflict with livestock.

Response 28: After delisting, the State, Tribal, and Federal entities will regulate take in a manner that will not threaten the wolf population. Wolves listed as a game animal (i.e., all wolves within the NRM DPS where the Act's protections are being removed) can only be taken by the public as proscribed by State statute, usually fair chase hunting or as furbearers by regulated trapping. Public take of wolves in the act of depredating on domestic animals is regulated by State defense of property laws and is limited to shooting. Wildlife agency professionals adhere to specific protocols when they capture, handle, or euthanize wildlife for research or management purposes. In the vast majority of situations, wolf control will be accomplished by regulated public hunting and trapping or agency control of problem wolves. State authorized wolf control may include, just as the federally authorized control program currently does, gunning from the air and ground trapping and, in a few cases, removing pups from dens. Deliberate poisoning of wolves will not be allowed due to current Environmental Protection Agency label restrictions on the use and application of all poisons (including M–44 devices) capable of killing wolves. Protections in National Parks would continue and would be unaffected by delisting.

Hunting (and in some areas even unregulated hunting) has not threatened wolf populations (Boitani 2003). Hunting is a valuable, efficient, and cost-effective tool to help manage wildlife populations. Viable robust wolf populations in Canada, Alaska and other parts of the world are hunted and trapped and are not threatened by that type of take. The wolf population in Wyoming would remain listed and could not be legally hunted or trapped by the public under this rule. The Service recognized (Service 1994, p. 1–13) and encouraged (Bangs *et al.* in press; Bangs 2008) State wolf management programs to incorporate regulated public hunting in their wolf conservation programs. Conservation programs to restore large predators such as mountain lions, black bears, and wolves succeeded because of the historic restoration of wild ungulates, such as elk and deer, by State fish and game agencies and hunter dollars and involvement (Geist *et al.* 2001, p. 175–181).

While not required by the Act, the State, Tribal, and Federal managers will continue to use a combination of management options in order to reduce wolf/human conflicts, including nonlethal forms (Bangs *et al.* 2006). However, these methods are only effective in some circumstances, and no single tool is a cure for every problem. Lethal control will still be required in many circumstances. Lethal control also can improve the overall effectiveness of non-lethal methods (Brietenmoser *et al.* 2005, p. 70). In areas of the NRM DPS with year-round high livestock density (unsuitable habitat) it is almost

impossible to prevent chronic livestock depredation if wolf packs form in those areas.

Issue 29: Some commenters suggested that periodic population declines in portions of the NRM DPS related to disease occurrence and wolves killing other wolves to self-regulate the population demonstrated that delisting was premature.

Response 29: There is a natural limit to how many wolves suitable habitat in the NRM can support. Preliminary data indicates wolf pack distribution has been stagnant since 2002, livestock conflicts and wolf control have increased (in some areas), and wolf numbers maybe stabilizing and that may limit the population long-term to around 1,500 wolves. Wolf populations above carrying capacity appear to be more susceptible to disease than those below carrying capacity (Mech *et al.* 2008, p. 833; Kreeger 2003, p. 202).

Exposure to canid diseases is high in the NRM and localized disease outbreaks will continue to periodically occur but no diseases have impacted wolf recovery. State plans commit to monitoring wolf health to ensure any impacts caused by diseases or parasites are quickly detected. Furthermore, wolf numbers become regulated by the amount of available prey, intra-species conflict, other forms of mortality, and dispersal. Intra-species conflict appears to intensify when areas reach ''social maximums.'' By managing for at least 50 percent above the minimal recovery levels, State and Federal management provide an adequate safety margin for such events. This margin, combined with the State's commitment to adaptively manage the species as needed, adequately addressed concerns about periodic population declines. Furthermore, wolf populations can rapidly recover from severe disruptions if mortality is reduced; increases of nearly 100 percent per year have been documented in low-density suitable habitat (Fuller *et al.* 2003, pp. 181–183; Service *et al.* 2009, Table 4). Wolf biology in combination with careful monitoring and management ensure periodic population declines will not threaten or endanger the NRM DPS.

Issue 30: Many people commented that the State regulatory frameworks were not adequate and should not have been approved. Some commenters cited anti-wolf statements by public officials and county ordinances as evidence that persecution of wolves will resume if delisting occurs.

Response 30: We recognize that human persecution of wolves was the primary reason for their wide-spread extirpation across North America. We fully analyzed the nature and magnitude of this threat in Factors C, D, and E. below. Despite statements to the media by some public officials and some county ordinances that, if implemented, would be problematic for maintenance of a recovered wolf population, the official written policy and laws of the States supersede county rules and authorities and statements by politicians reported by the media. Our evaluation of State regulatory mechanisms considered all available laws, regulations, ordinances, resolutions, memorials, statements by elected officials, and State plans. State and Federal management ensures the continued long-term maintenance of a recovered NRM wolf population.

Issue 31: Many commenters were concerned the States would not honor their commitments or would change their regulatory framework in a manner inconsistent with their wolf management plans after delisting. Such commenters pointed to State law or regulatory protections that changed after the publication of our previous final delisting determination.

Response 31: We recognize that States can alter their regulatory framework after we issue a final delisting rule. Therefore, per our post-delisting monitoring requirements, we will initiate a status review to determine if relisting is warranted if States alter their State laws or management objectives in a manner that significantly increases the threat to the wolf population. Should relisting be required, we may make use of the emergency listing authorities under section 4(b)(7) of the Act to prevent a significant risk to the well-being of any recovered species. This measure will preclude inadequate regulatory mechanisms from threatening the wolf population in any State or recovery area. While our post-delisting monitoring window is 5 years, meaningful changes in State law or management objectives that would significantly increase the threat to the wolf population could lead to reconsideration of listing, including the potential for emergency listing, at any point. For example, if a State changed their regulatory framework to authorize the unlimited and unregulated taking of wolves, a condition we have previously determined threatened a wolf population, emergency listing would be immediately pursued. Finally, as an additional layer of protection, the Act allows for citizen petitions to consider relisting should the population's status change.

Issue 32: Some commenters indicated that that the States' defense of property laws represented an unregulated taking of wolves, because wolves could be killed regardless of the wolf population's status relative to the minimum recovery criteria. Other commenters suggested that we ignored the possibility of illegal take increasing once the protections of the Act were removed. Some commenters pointed to the high mortality levels that occurred after the previous delisting became effective as evidence that existing regulatory mechanisms are not adequate.

Response 32: Except for the mortality that occurred in Wyoming's predatory animal area, nearly all of the NRM wolf mortality that occurred after our previous delisting took effect would have occurred even if the Act's protections had remained in place. In terms of take authorization, Idaho's and Montana's regulatory frameworks are similar to the existing nonessential experimental population regulations (59 FR 60252, November 22, 1994; 59 FR 60266, November 22, 1994; 70 FR 1286, January 6, 2005; 73 FR 4720, January 28, 2008; 50 CFR 17.84(i) & (n)). All forms of take will be considered in the States' total allowable mortality levels. While we expect the delisted NRM wolf population to be reduced from current levels, the NRM DPS will be managed for at least 15 breeding pairs and at least 150 wolves and is likely to consist of 973 to 1,302 wolves in 77 to 104 breeding pairs. Should periodic and unanticipated disruptions occur, wolf biology in combination with careful monitoring and management ensure declines will not threaten or endanger the NRM DPS. Montana and Idaho will manage the wolf population at high enough levels over their State minimums to provide a more than adequate safety margin for any additional Defense of Property take of wolves by private citizens. Furthermore, we believe such opportunities will be limited as it is uncommon to see a wolf attacking livestock, let alone be able to shoot it. In addition, the number of mountain lions and black bears taken under State regulations, and the number of wolves taken under similar federal regulations, has been low (about 8 percent of all problem wolves removed by agency authorized control) which further demonstrates that defense of property take is minor and will not exceed State safety margins.

Issue 33: Some commenters thought wolf management plans were vague on how, whether, and to what extent enforcement would be carried out. Some commenters thought overwhelmingly anti-wolf public sentiment would discourage county and State attorneys from enforcing State wildlife laws,

particularly among attorneys with ambitions for higher public office.

Response 33: Upon delisting, wolves in all States in the NRM DPS except Wyoming will become protected by State laws and regulations. In most cases, when State game agencies recommend prosecution, prosecution is pursued. As with all enforcement actions (State or Federal), the outcome depends upon the strength of the case. Such enforcement will ensure illegal activity remains minimal. While listed, illegal killing was estimated to be responsible for 10 percent of annual mortality. Following our previous delisting, there was no indication that illegal mortality levels changed from those occurring while wolves were delisted. While some level of illegal mortality will continue, State management well above minimal recovery levels, combined with wolves' reproductive capabilities, ensures the NRM DPS will not fall below recovery levels. Legal hunting opportunities may also reduce illegal killing. In the Midwest, it appeared that fewer wolves were illegally killed during the deer hunting season when wolves were delisted than when they were listed (Wydeven *et al.* 2008). Should failure to prosecute result in excessive mortality and an inability maintain the wolf population above recovery levels, an outcome we believe is extremely unlikely, we would consider relisting, including the potential for emergency relisting.

Issue 34: We received numerous comments on the adequacy of Wyoming's 2003, 2007, and 2008 regulatory frameworks. Many commenters agreed with the July 18, 2008 District Court preliminary injunction order and suggested that it left no doubt that Wyoming's regulatory framework contained the same flaws as their 2003 regulatory framework. Some commenters recommended Wyoming be required to revise their wolf management law. Other commenters thought Wyoming's plan was adequate and pointed to our December 12, 2007 approval for support. Some of these commenters stated that a change in our position would result in an unobtainable moving target for Wyoming. The State of Wyoming strongly defended their 2007 law and their recent modification to develop an improved 2008 plan, and 2008 emergency regulations (Freudenthal 2008). The State of Wyoming suggested that we ''must consider the State's current wolf management statutes'' (2007 law, 2008 regulations and plan), that we ''can not rely on the findings in a preliminary injunction order as a reason to reject the State's wolf management scheme,'' and that ''nothing in the text of the Act requires that the regulatory mechanisms governing the management of a species be statutory.'' Wyoming stated that our comments on their State plan which suggested a need to amend State law as the foundation for a revision to their regulatory framework ''provided irrefutable proof of this prejudged outcome.'' Finally, Wyoming wanted the Service clarify that it was in error to reject Wyoming's 2003 wolf plan and that the Service was correct in its 2007 approval of Wyoming's 2007 plan.

Response 34: The best scientific and commercial data available demonstrates that the wolf population remains in need of the Act's protections in the Wyoming portion of the range because of inadequate regulatory mechanisms. The 2008 revisions in the Wyoming wolf management plan and emergency regulations (Chapter 21) are greatly improved over earlier versions, however they are still dependent on Wyoming statute and at times appear to promise actions that Wyoming statute prohibits. For example the Wyoming plan clearly commits to managing genetic connectivity, but State law allows no regulation of wolf mortality over 88 percent of the State, including many areas likely to be used by dispersing wolves. While we still believe most breeding pairs will remain inside of the boundary of the current trophy game area, the extent of the predatory animal area certainly limits most opportunity for genetic and demographic connectivity, a condition that will assist in sustaining wolf recovery in the GYA. We also believe our 2004 rejection of Wyoming's 2003 wolf management plan was correct (see 71 FR 43410, August 1, 2006). We also determined that in hindsight, we were probably too optimistic about what the law really committed Wyoming to and what could be accomplished by regulations alone. We also should have evaluated the potential for genetic connectivity more closely, when we determined the 2007 plan was sufficient. The very specific and deliberate intent, tone, and wording of Wyoming law clearly continues to be the major impediment to Wyoming developing and implementing a wolf management plan the Service can approve. In the past Wyoming has, with the exception of the professional recommendations they used to establish the proposed 2008 hunting season, almost without exception encouraged wolf take to drive the wolf population down to minimum recovery levels. We believe that the best way for Wyoming to provide adequate regulatory mechanisms would be to develop a statewide trophy game management designation as the basis for any revised regulatory framework. At a minimum, this change would require a revision of Wyoming's wolf management law as the current law establishes the limits of the trophy game area to only 12 percent of the State. Until Wyoming revises their statutes, management plan, and associated regulations, and is again Service approved, wolves in Wyoming shall remain protected by Act. See discussion in Factor D.

Issue 35: Many parties commented on the amount of Wyoming that should be managed for maintenance of wolves including the size of Wyoming's trophy game area. Commenters suggested that wolf recovery could be accomplished: Without wolves in Wyoming; within Wyoming's National Parks; within Wyoming's National Parks and wilderness areas; or within the 12 percent of Wyoming currently designated as a trophy game area. Some believed Wyoming's 2007 law allowed the trophy game area to be expanded by the WGFC. Other commenters stated Wyoming's trophy game area should be much larger, including all suitable habitat and all potential dispersal corridors, or State-wide like all the other States in the NRM DPS. Some thought if wolves remained listed in Wyoming then they should continue be managed as experimental populations, others did not.

Response 35: The predatory animal area of Wyoming covers at least 88 percent of Wyoming and can not be expanded per Wyoming Statute. However, the 12 percent of Wyoming with trophy game protections can be reduced by WGFC. Statewide trophy game status: Will allow Wyoming Game and Fish Department (WGFD) more flexibility to devise a management strategy, including regulated harvest, that provides for self-sustaining populations above recovery goals; prevents a patchwork of different management statuses; will be easier for the public to understand and, thus, will be easier to regulate; is similar to State management of other resources like mountain lions and black-bears; and is consistent with the current regulatory scheme in that the entire State is currently nonessential, experimental. Furthermore, maintenance of the Act's protections Statewide will assist Service Law Enforcement efforts that might otherwise be difficult if predatory animal status was allowed in portions of Wyoming. Finally, retaining the Act's protections in all of Wyoming is biologically warranted because: Wolf

dispersal capabilities allow them a range that encompasses the entire state; and retention of the Act's protections in only the current trophy game area would substantially limit potential genetic connectivity. This does not mean Wyoming must manage for wolf pack occupancy everywhere in Wyoming in the future as long as their management framework safely supports their share of a recovered wolf population and allows for adequate genetic and demographic connectivity into the future and incorporates normal wildlife population fluctuations, such as those that appear to have occurred in YNP in 2008. Preliminary counts suggest the YNP segment of the wolf population may be 124 wolves in 12 packs with only 6 breeding pairs. However, the overall GYA population will be similar to 2007, indicating the importance of wolves in Wyoming outside YNP to maintaining wolf recovery in the GYA.

Thus, this final rule removes the Act's protections throughout the NRM DPS except for Wyoming. Wolves in all of Wyoming will continue to be regulated as a non-essential, experimental population per 50 CFR 17.84 (i) and (n). We considered removing the Act's protection in those few often fragmented parts of Wyoming with adequate regulations, such as Wind River Tribal lands, National Parks and Refuges, but to ensure consistent enforcement of the Act, the potential wolf dispersal throughout Wyoming, and other reasons we did not. The adequacy of Wyoming's regulatory mechanisms is discussed further under Factor D below.

Issue 36: Some believed Idaho mandated elimination of wolves. They quoted comments from state officials that suggested wolves be killed to minimum levels as soon as possible. Some indicated the Service should not have approved Idaho's wolf management plan. Others believed that the liberal nature of Idaho's March 28, 2008 defense of property law invited abuse and cited an incident where a person who chased a wolf for a mile before shooting it was not prosecuted. Some said Idaho's 2002 plan makes clear its position is all wolf removal, that IDFG can reclassify wolves ID–36–201 and could expand methods of take (e.g., could broadcast poison). Others said the Service approved Idaho's plan before its step down implementation plan was developed, thus it was not known to be an adequate plan when approved. Others suggested Idaho's regulations were more than adequate and wolves should be delisted.

Response 36: We coordinated extensively with Idaho on the development of its plan and carefully reviewed several drafts of the plan over the course of 2002. We stand by our conclusion that the Idaho plan constitutes adequate regulatory mechanisms. Idaho's implementation planning improved the specific wolf conservation measures Idaho would undertake. Central Idaho provides the largest contiguous block of suitable wolf habitat in the NRM as evidenced by the over 840 wolves living there now. The quality of this habitat, combined with the State's management strategy leave no doubt wolves will be maintained far above minimum recovery levels in Idaho. Idaho's comments on the proposed rule provide an excellent and detailed review of Idaho law, regulations and its formal position regarding the future of wolves in Idaho (Otter 2008). Both its description of how its defense of property laws and hunting regulations were developed are thorough and should remove any doubt that Idaho's regulatory framework will adequately regulate human-caused mortality and maintain a recovered wolf subpopulation in Idaho.

We have also reviewed all the wolves taken under State defense of property regulations. Our March 2008 delisting was predicated on State defense of property laws being similar in their biological effect to the Acts' 2005 and 2008 experimental population regulations. The March 28, 2008 law passed by the Idaho Legislature Idaho Code § 36–1107 was an amendment to an existing law that was specific to black bears and mountain lions. The law added wolves to the protection of property statute and added language that governed taking of wolves. It made the reporting of wolf mortality more stringent than that for bears and lions. Following the initial delisting of gray wolves, private control actions did not increase dramatically. From delisting through July 18, 2008, eleven wolves were killed under Idaho's law. In 2006 and 2007, seven wolves were killed each year under the Act's 10(j) rule. The increase in wolves killed in 2008 by livestock and pet owners is consistent with an increase in wolves and concomitant depredations in Idaho that year.

We reviewed the incident where an individual chased a wolf on a snow machine for a mile before shooting it. While IDFG recommended prosecution, the local county prosecutor determined the new law's definition of ''worrying'' may not have withstood the scrutiny of a jury under the circumstances in this case. The prosecutor supported IDGF issuing a warning to this individual in case should other questionable take occur in the future. We believe the particulars of this case make it unique. IDFG and the Idaho Attorney General's office are working with prosecutors to assure consistent enforcement of § 36–1107 throughout the state.

In addition, all known Idaho wolf mortality, including that related to defense of property, count against the total mortality quota for that hunting unit and would be removed from the allowable hunting harvest. It is unlikely that such take would result in a level of take beyond that allowed by hunting district because hunting occurs after most defense of property take would occur. Thus, that level of mortality would be compensated for by either closing or reducing the hunting quota. Additionally, State management several times above minimum recovery levels provides further assurance that recovery will not be compromised by such sources of mortality. Therefore, we determine that the new law will not threaten the wolf population in Idaho as long as IDFG prosecutes most individuals who abuse it and Idaho maintains its commitment to manage their share of the wolf population well above minimum recovery levels.

Issue 37: While most agreed that Montana appeared to have the best plan and regulatory framework of any State, and it should be the model for other states, others believed it was inadequate. Some thought the lack of a quota system on defense of property take of wolves allowed for unlimited and unregulated taking. Others thought that the level of hunting and trapping that Montana's plan could allow might threaten the wolf population.

Response 37: Montana did an outstanding job of describing, in detail, its regulatory framework and its commitment to wolf management (McDonald 2008). We have reviewed all the wolves taken under State defense of property regulations. Our March 2008 delisting was predicated on State defense of property laws being similar in their biological effect to the Acts' 2005 and 2008 experimental population (10j) regulations. In Montana, only four wolves were taken by private citizens while wolves were delisted between March 28 and July 18, 2008, but all could have been taken under the Act's 10j regulations if the species had been listed. Montana conducted a thorough analysis before setting its hunting season quota and then chose a conservative harvest to build in extra caution. Montana regulatory frame clearly constitutes an adequate regulatory frame work for the purposes of the Act.

Issue 38: Some commenters maintained that none of the NRM DPS should be delisted until Oregon, Washington, and Utah had approved wolf management plans.

Response 38: Any wolf conservation by Washington, Oregon, Utah, and the Tribes will be beneficial, but is not necessary to either achieve or maintain a recovered wolf population in the NRM DPS. Still, Oregon and Utah have State wolf management plans/strategies and Washington is close to finishing theirs (See Factor D). We have assisted and consulted with them during those efforts. This is consistent with the recovery plan which considered parts of these States (Service 1987, p. 2) as being associated with the NRM wolf population. Management in all three States appears likely to benefit the NRM DPS but not significantly.

Issue 39: Some commenters wanted the States to manage for breeding pairs rather than undefined packs.

Response 39: The discrepancy between breeding pairs and packs no longer appears relevant as the States and the Service have committed to measure wolf recovery criteria by breeding pairs and numbers of wolves (Montana 2003; IDFG 2007; Wyoming 2008, p. 13; Mitchell *et al.* 2008). However, Wyoming's comments seemed to suggest that YNP packs that did not raise pups in 2005 might qualify as breeding pairs anyway because they bred in 2006 (Freudenthal 2008, p. 8). This is not an accurate interpretation of the breeding pair metric.

Issue 40: Some commenters recommended wolf management be transferred to the States and Tribes.

Response 40: The Service agrees that a recovered wolf population is best managed by the respective States and Tribes. The States have relatively large and well-distributed professional fish and game agencies that have the demonstrated skills and experience that has successfully managed a diversity of resident species, including large carnivores. We believe these State agencies are similarly qualified to manage a recovered wolf population. State management of wolves will be in alignment with the classic State-led North American model for wildlife management which has been extremely successful at restoring, maintaining, and expanding the distribution of numerous populations of other wildlife species, including other large predators, throughout North America (Geist 2006, p. 1; Bangs 2008).

Under cooperative agreements with us, Montana and Idaho, and Nez Perce Tribe have successfully managed wolves in those States for the past 4 to 13 years. The Blackfeet, Salish and Kootenia, and Wind River Tribes have also developed expertise in wolf management within their tribal wildlife agencies by participating in wolf management for the past several years. This allowed their organizations to develop experience, knowledge, and expertise in wolf management and conservation and to develop a track record of credibility and trust with state residents and local government agencies. Unfortunately, with the exception of a few months when wolves were delisted in 2008, Wyoming has chosen to not actively participate in wolf management. The Service worked closely with the States as they developed their wolf management plans to ensure that they will always maintain a wolf population that exceeds recovery criteria. We are confident the States, except Wyoming, and Tribes will adequately manage wolves so the protections of the Act will not again be required.

Until Wyoming revises their statutes, management plan, and associated regulations, and they are approved by the Service, wolves in Wyoming continue to require the protections of the Act.

Issue 41: Some parties raised a concern that State wolf management plans would not be implemented because funding for the plans is not guaranteed. These commenters thought that the lack of guaranteed funding undermined the adequacy of the regulatory mechanisms, thus, delisting should not occur.

Response 41: It is not possible to predict with certainty future governmental appropriations, nor can we commit or require Federal funds beyond those appropriated (31 U.S.C. 1341(a)(1)(A)). Even though federal funding is dependent on year-to-year allocations, we have consistently and fully funded wolf management. Federal funding will continue to be available in the future for State management, but certainly not to the extent while wolves were listed. The States recognize that implementation of their wolf management plans requires funding. The States have committed to secure the necessary funding to manage the wolf populations under the guidelines established by their approved State wolf management plans (Montana 2003, p. xiv; Idaho 2007, p. 24, 47–48; Idaho 2002; p. 23–25; Wyoming 2007, p. 29–31). All have worked with their congressional delegations to secure Federal funding, but recognized that other sources of funding may eventually be required to implement their plans. In addition to State license fees or other forms of State funding, Federal funding is available to help manage a delisted wolf population including in the form of direct appropriations, Pittman-Robertson Wildlife Restoration Act, other Federal grant programs, and private funding. The Service will continue to assist the States to secure adequate funding for wolf management. The Federal government will continue to fund wolf management in Wyoming. If wolf management by a State or Federal agency was inadequately funded to carry out the basic commitments of an approved State plan, then the promised management of threats by the States and the required monitoring of wolf populations might not be addressed. That scenario could trigger a status review for possible relisting under the Act, including possible use of the emergency listing authorities under section 4(b)(7) of the Act to prevent a significant risk to the well-being of any recovered species.

Issue 42: Several parties suggested that we should have considered the risk to the wolf population from catastrophic events such as fire, climate change, drought, disease, and stochastic events.

Response 42: In response to these comments, we added a discussion of catastrophic events under Factor E below. Other potential catastrophic events are considered in other sections including our evaluation of habitat modification, diseases and parasites, human harassment and killing, genetic risks, climate change, and human attitudes. Wolves are one of the most adaptable and resilient land mammals on earth and, except for excessive human persecution, wolf populations can survive every type of natural catastrophic event. There is no record of a wolf population in historic habitat anywhere in the world ever being extirpated by a natural event, except perhaps during the ice ages.

Issue 43: Some commenters requested the Service consider the potential for low genetic diversity to threaten the NRM DPS. They contend that the current or predicted population is not high enough to maintain long-term connectivity and genetic security. These commenters suggested this issue is of greatest concern in the GYA where geographic factors could isolate the population. Commenters recommended that we establish corridors of suitable habitat, or nearly contiguous pack territories, between the recovery areas. Some recommended that we provide habitat protections for identified natural linkage zones between and within the GYA and central Idaho and northwestern Montana. It also was recommended that we should designate critical habitat for these linkage zones.

Response 43: We have greatly expanded our discussion in Factor E regarding genetics. Furthermore, Canadian authorities also have a long history of cooperation with us and have designed wolf management programs in Alberta and British Columbia to promote recovery and genetic exchange with Montana and Idaho (McDonald 2008). Assuming adequate regulation of take across all potential migratory corridors, we do not believe there is now or will be in the foreseeable future a need to develop specific habitat corridors for wolf dispersal. A number of factors make this unnecessary including: The current high levels of genetic diversity; assured future genetic exchange by natural dispersal or if necessary human assistance; the distance wolves routinely disperse through even highly unsuitable habitat; and the limited amount of current and future human development in the corridor between the recovery areas (and Canada), including the GYA, because of the amount and distribution of public land. Wolves have an unusual ability to rapidly disperse long distances, across virtually any habitat and select mates to maximize genetic diversity (Wabakken *et al.* 2007, p. 1631; Linnell *et al.* 2005, p. 383; vonHoldt *et al.* 2007). Thus, connectivity issues are among the least likely to affect wolves when compared to nearly any other species of land mammal (Paquet *et al.* 2006, p. 3; Liberg 2008, p. 1). If necessary any complications from a potential lack of natural habitat connectivity could be quickly resolved by agency-managed genetic exchange. Connectivity and genetics are discussed further below under factors A and E, respectively.

Critical habitat can only be designated for threatened and endangered species. Furthermore, under section 10(j)(2)(C)(ii) of the Act, critical habitat can not be designated for nonessential experimental populations. Therefore, across most of the NRM DPS, critical habitat has never been appropriate. Finally, since we are also removing the Act's protections across those portions of the DPS where the species was previously endangered these areas no longer qualify as potential critical habitat.

Issue 44: Some commenters stated that we failed to consider the impacts of State hunts on the social structure of wolf packs.

Response 44: Social status in wolf packs changes regardless of human-caused mortality and is part of wolf ecology. Humans do increase the rate of turn over, but healthy wolf populations all over the world, including Canada and Alaska, are harvested by people and wolf pack structure is amazingly resilient. The States have incorporated hunting seasons, bag limits, and fair chase methods of take to intentionally reduce the potential impact of human-caused mortality on pack breeding potential and its subsequent ability to successfully raise pups. This issue is considered under Factor E below.

Issue 45: Some commenters encouraged us to investigate human dimensions with a protocol that would allow quantification of changes in the attitudes of the general public, farmers, hunters, and other stakeholders.

Response 45: We agree that the values people hold about wolves may provide valuable insight into successful management strategies. The States have already conducted surveys about human values towards wolves (Idaho 2007, Appendix A; as one example) and will likely continue to do so in the future. We believe this information may be helpful to formulate State policies. However, such monitoring is not required by the Act in order to justify delisting.

Significant Portion of Range

Issue 46: Several commenters stated that the 2007 Department of the Interior Solicitor's opinion (U.S. Department of the Interior, Office of the Solicitor 2007) was an incorrect interpretation of the Act. These commenters argued that we have authority to list or delist only whole species, subspecies, and DPSs—in other words, if we find a species to be in danger of extinction in only a significant portion of its range, we must list it and apply all of the protections of the Act to its entire range, even to portions of the range that are not at risk. These commenters opined that the partial listing approach represents a departure from thirty years of listing practice.

In particular, some commenters suggested the NRM DPS should be protected rangewide because it retains the need for listing over a significant portion of its range. They suggested partial listings would lead to a limitless series of petitions and lawsuits over the status of taxa in portions of their ranges. Others suggested the NRM DPS should be delisted throughout its entire range, unless the threats are so severe in the Wyoming portion of the range that it puts the entire NRM DPS's future in doubt. These commenters suggested the Service's new listing approach inappropriately allows partial-listings when the loss of a portion of range results in a decrease, no matter how small, in the ability to conserve a species, subspecies, or DPS.

Response 46: On March 16, 2007, the Solicitor of the Department of the Interior issued a memorandum opinion with an extensive evaluation of the meaning of ''in danger of extinction throughout all or a significant portion of its range'' (Department of the Interior, Office of the Solicitor 2007). We agree with the interpretation of the Act set forth in the Solicitor's opinion, and disagree with these comments for the reasons given in that opinion. Once we determine listing is appropriate, section 4(c) of the Act requires we ''specify with respect to each such species over what portion of its range it is threatened.'' In this case, we are specifying that the protections of the Act remain necessary in Wyoming. Thus, the protections of the Act shall remain in place in the Wyoming portion of its range. The interpretation of the Act advocated by these commenters fails to give sufficient consideration to the import of section 4(c), is inconsistent with legislative history of the Act that strongly supports the view that Congress intended to give the Secretary broad discretion to tailor the protections of the Act with the needs of the species.

Moreover, even before the 2007 Solicitors opinion, we have applied differential levels of protections for species facing differential levels of threats in different parts of their range. For example, in 1978, the gray wolf was protected as endangered in the lower-48 States, except in Minnesota, where it was protected as threatened (43 FR 9607, March 9, 1978). Nor is the listing determination for NRM DPS the only listing determination applying the Solicitor's opinion. In our 2008 Gunnison prairie dog (*Cynomys gunnisoni*) 12-month finding (73 FR 6660, February 5, 2008), we determined that the Gunnison's prairie dog does not warrant the Act's protections throughout its range, but that the significant portion of the species' range located in central and south-central Colorado and northcentral New Mexico does warrant protection under the Act. On July 10, 2008, we determined the Preble's meadow jumping mouse (*Zapus hudsonius preblei*) was not threatened throughout all of its range and the portion of the subspecies' range located in Colorado represented a significant portion of the range where the subspecies should retain its threatened status (73 FR 39790). Thus, this rule removes the Act's protections in Wyoming while retaining them in Colorado (73 FR 39790, July 10, 2008).

According to the Solicitor's opinion, we have broad discretion in defining what portion of a range is ''significant,'' but this discretion is not unlimited.

Specifically, we may not define ''significant'' to require that a species is endangered only if the threats faced by a species in a portion of its range are so severe as to threaten the viability of the species as a whole. The comment that a portion of the range of a species can be significant only if its loss would put the future of the species in doubt rests on a single quote from hearing testimony on a bill that was a precursor to the Act. If by the future of the species being in doubt, the commenter meant that the threat to the portion of the range must threaten the entire species, such an interpretation would read the ''significant portion or its range.'' The Solicitor's opinion includes a comprehensive evaluation of this issue and the relevant case law.

For this determination, we used an analysis similar to that we have used in other recent listing determinations: A portion of a species' range is significant if it is part of the current range of the species and it contributes substantially to the representation, resiliency, or redundancy of the species. The contribution must be at a level such that its loss would result in a decrease in the ability to conserve the species. In other words, in considering significance, the Service asks whether the loss of this portion likely would eventually move the species toward extinction, but not to the point where the species should be listed as threatened or endangered throughout all of its range.

Issue 47: Several commenters stated that the ''partial-listing'' approach allowed by the Solicitor's opinion undoes the effect of the 1978 DPS amendments to the Act.

Response 47: We do not believe this approach undoes the 1978 amendments to the Act. Instead, it compliments the 1978 amendments. A DPS of a vertebrate species which interbreeds when mature is considered and treated as a species (i.e., a listable entity) under the Act. A significant portion of the range is a portion of the range of the listed entity (whether a full species, subspecies, or DPS of a vertebrate) that contributes meaningfully to the conservation of the species. Therefore, we may apply the protections of the Act in a significant portion of a DPS. In addition, we may apply the protections of the Act in a significant portion of a species or subspecies of non-vertebrate.

According to our DPS policy (61 FR 4722, February 7, 1996), a DPS must be discrete and must be significant to the taxon to which it belongs (species or subspecies) as a whole. The term ''significant'' in the Act's definitions of endangered and threatened species should not be considered entirely equivalent to the ''significance'' element of the DPS policy. However, we recognize that many of the attributes (described below) we have identified as important for evaluating whether a portion of a species' range is significant are similar to the attributes identified in the DPS policy as being appropriate for evaluating the significance of a potential DPS. There is no requirement that a significant portion of the range be discrete, but similar to DPSs, a significant portion of the range must be significant. As explained in detail previously, the significance of a significant portion of the range is based on an evaluation of its contribution to the conservation of the listable entity being considered. The DPS policy lists four possible factors to consider when determining significance, but does not limit consideration of significance to only those four factors. The considerations we made in this instance for determining whether a portion is significant encompass and expand on some of the concepts in the DPS policy.

Issue 48: Some commenters recommended we use a 4(d) rule to reduce regulatory restrictions in more secure portions of its range instead of the significant portion of range approach.

Response 48: Special rules under section 4(d) of the Act apply only where the protections of the Act are in place. Thus, once we determined the NRM DPS was not threatened in all of its range, use of section 4(d) was no longer an option across most of the DPS. While a 4(d) rule allows us to tailor the Act's taking provisions as necessary and advisable to provide for the conservation of the species, the approach used here also eliminates additional unnecessary regulation. We believe this approach is more consistent with the intention of Congress as expressed in the legislative history concerning the phrase ''significant portion of its range.''

Issue 49: Some commenters suggested a ''partial delisting'' would not improve the conservation status of the DPS and would treat different communities inequitably with regards to the level of protection required and costs associated with them over different geographic areas.

Response 49: We believe this approach allows for a more surgical application of the Act, as envisioned by Congress when it wrote the ''significant portion of its range'' language. The Act does not allow us to consider in this listing decision whether there would be higher costs in one portion of the range than in the rest of the NRM DPS. On the whole, we believe this targeted approach provides for the necessary and appropriate needs of the species, while avoiding unnecessary regulatory burdens.

Issue 50: Many commenters provided opinions on what portion of Wyoming was a significant portion of range. Some commenters supported the position in our 2007 proposal that the only significant portion of Wyoming was the 12 percent identified in State law as the trophy game area. Many commenters were concerned that these boundaries would constrain our ability to maintain a recovered population in Wyoming and instead suggested all of Wyoming was a significant portion of range for wolves. Some commenters indicated the significant portion of Wyoming should include all areas of suitable habitat and potential dispersal corridors to other NRM DPS recovery areas. Other commenters thought the significant portion of Wyoming should include potential included corridors to States outside the NRM DPS and cited documented dispersal of wolves across various portions of Wyoming into South Dakota, Colorado, and Utah as evidence. Other commenters indicated that all of Wyoming was once historic habitat, thus all Wyoming should now be considered a significant portion of range. Still other commenters suggested that the significant portion of range should not split the recovery area and should include the entire GYA (including those portions of the recovery area in Montana and Idaho). Several commenters stated that management practicality favors use of the man-made boundaries. Our significant portion of range analysis can be found in the Conclusion of the 5-Factor Analysis section of this rule below.

Response 50: After careful consideration, we now believe that the boundaries of the significant portion of the range in Wyoming should be expanded to include the entire State. Retaining the Act's protections Statewide: Encloses and defines the area where threats are sufficient to result in a determination that a portion of a DPS' range is significant, and is endangered or threatened; clearly defines the portion of the range that is specified as threatened or endangered; and does not circumscribe the current distribution of the species so tightly that opportunities to maintain recovery are foreclosed. Man-made boundaries are appropriate because of these boundaries correspond to differences in threat management; these differences in threat management result in biological differences in status. There also are a practical considerations (e.g., law enforcement) supporting use

of the State line to delineate the significant portion of range where the Act's protections are still necessary. Retention of the Act's protections throughout the GYA, including those portions in Idaho and Montana, is not necessary given the adequacy of regulatory mechanisms in those States. These issues are discussed further in the Conclusion of the 5-Factor Analysis section below.

Issue 51: Some commenters expressed dissenting views and interpretations of the word ''range'' in the Act's phrase ''significant portion of its range.'' Several believed that ''range'' should mean historical range. Others opined that our definition was the same used in our 2003 rule that was invalidated by the court (68 FR 15804, April 1, 2003). Still others suggested our consideration of significant portion of range should consider all suitable or potential habitat.

Response 51: As elaborated in the 2007 memoradum opinion (Department of the Interior, Office of the Solicitor 2007), we believe the law is clear that ''range'' in this phrase refers to ''current range,'' not ''historical range'' and that the Service therefore must focus primarily on current range. Data about the historical range and how the species came to be extinct in a portion of its historical range may be relevant in understanding or predicting whether a species is ''in danger of extinction'' in its current range. The fact that a species has ceased to exist in what may have been portions of its historical range does not necessarily mean that it is ''in danger of extinction'' in a significant portion of the range where it currently exists. For the purposes of this rule, ''range'' includes all of the NRM DPS (as identified in Factor A below and illustrated in Figure 1). Thus, our five-factor analysis analyzed threats across all portions of the NRM DPS.

Public Involvement

Issue 52: Some thought that the Service should have provided additional opportunities to learn more about the proposal and to provide comments including additional public hearings. Specifically, we received requests for hearings in Denver, Colorado, Seattle, Washington, Portland, Oregon, Washington, DC, and Jackson, Wyoming.

Response 52: We have provided ample opportunity for public comment including public comment periods totaling 150 days. Such a lengthy comment period goes well beyond the basic requirements of the Act and other Federal rulemaking procedures. Section 4(b)(5)(E) requires that we hold one public hearing on proposed regulations if requested. During this rulemaking process we held eight public hearings and eight open houses (72 FR 6106, February 8, 2007; 72 FR 14760, March 29, 2007; 73 FR 36939, July 6, 2007). We selected locations that were within a reasonable driving distance of where wolves live and in every State within the NRM DPS. We also alerted interested parties to the details of public hearings and opportunities for public comment. Public hearing times and locations and other avenues to comment were announced in the **Federal Register**, posted on our Web site and in our weekly wolf reports, and publicized in local and national press releases. All comments, whether presented at a public hearing or provided in another manner, received the same review and consideration. Commenting via electronic, hand delivery, or letter allowed unlimited space to express comments, as opposed to the public hearing format, which limited comments to three minutes in order to provide an opportunity for all attending to speak. Over 520,000 comments were received including approximately 240,000 comments during our most recent comment period. This significant effort satisfies our statutory responsibility under the Act.

Scientific Analyses

Issue 53: Some commenters recommended we conduct a population viability analysis (PVA) or other additional modeling exercises or analysis before delisting.

Response 53: The Act requires that we use the best scientific data available when we make decisions to list, reclassify, or delist a species. PVAs can be valuable as a tool to help us understand the population dynamics of a rare species (White 2000). They can be useful in identifying gaps in our knowledge of the demographic parameters that are most important to a species' survival, but they cannot tell us how many individuals are necessary to avoid extinction. The difficulty of applying PVA techniques to wolves has been discussed by Fritts and Carbyn (1995) and Boitani (2003). Problems include: Our inability to provide accurate input information for the probability of occurrence of, and impact from, catastrophic events (such as a major disease outbreak or prey base collapse); our inability to incorporate all the complexities and feedback loops inherent in wild systems and agency adaptive management strategies; our inability to provide realistic inputs for the influences of environmental variation (such as annual fluctuations in winter severity and the resulting impacts on prey abundance and vulnerability); temporal variation; selective outbreeding (vonHoldt *et al.* 2007); individual heterogeneity; and difficulty in dealing with the spatial aspects of extreme territoriality and the long-distance dispersals shown by wolves. Relatively minor changes in any of these input values into a theoretical model can result in vastly different outcomes. Thus, while we reviewed most of the wolf PVAs conducted to date, we believe conducting another PVA-type analysis on the effect of wolf population management would be of limited value in the NRM DPS. Instead, we relied upon an extensive body of empirical data on wolves and the NRM wolf population. We believe the State, Tribal and Federal commitments for adaptive management preclude any need to theorize regarding the NRM wolf population's future status. We also used models that employed PVA-like parameters and analysis to identify potentially suitable wolf habitat in the NRM DPS now and into the future (Carroll *et al.* 2003, 2006; Carroll 2006).

While some suggested that we conduct a PVA based on maintenance of 30 breeding pairs and 300 wolves or capping a wolf population at an arbitrary level, we believe this would lead to an inaccurate and misleading conclusion. Any such analysis would ignore the fluctuating nature of wildlife populations, actual requirements of the recovery goal, the commitments to manage well above that level, and to adapt their management strategies and adjust allowable rates of human-caused mortality should the population ever appear to not be meeting their management objectives that exceed recovery levels.

One PVA that maybe instructive to the NRM was one from Wisconsin (1999). It suggested a totally isolated population of 300–500 wolves would have a high probability of persisting for 100 years under most scenarios evaluated. Managing wolves at a hypothetical cultural carrying capacity of 300 instead of allowing the population to reach the biological carrying capacity of 500 had little effect on the risk of extinction * * * Virtually all simulated populations below 80 individuals declined in the high environmental variability scenarios (Bangs 2002, p. 6).

Issue 54: Some commenters felt that it was difficult to judge the scientific validity of the science we relied upon because some of the science and literature was gray literature, had not been peer reviewed, was in preparation, or was through personal communication.

Response 54: While we attempt to use peer reviewed literature to the maximum extent possible, the Act requires us to make our decision based on the best scientific and commercial data available regardless of form. Because we have so many ongoing research and monitoring projects new data are constantly being collected, analyzed, peer reviewed, and published. Such information often represents the best scientific data available (Service *et al.* 2007, p. 64, 114, 183, 213). All citations have been and continue to be available upon request.

Relisting Criteria

Issue 55: Some commenters recommended we develop a clear, unequivocal set of criteria for automatic relisting. Some commenters argued that monitoring is not sufficient if the results of investigations are not promptly incorporated in policy and management, and this type of rapid response requires availability of contingency funds, clear roles and authorities, and the power to impose the necessary actions on all involved partners. They state that because the effectiveness of the monitoring program depends upon adequate funding, the monitoring plan should have secure funding for at least five years before delisting occurs.

Response 55: State, Tribal, and Federal partners have committed to monitor the wolf population according to the breeding pair standard and publish annual reports of their activities for at least the first 5 years after delisting. We will post this information and our analysis of it annually.

While the Act contains no provision for ''automatic'' relisting of a species based on quantitative criteria, we believe that our criteria for relisting consideration are clear. Three scenarios could lead us to initiate a status review and analysis of threats to determine if relisting is warranted including: (1) If the State wolf population falls below the minimum NRM wolf population recovery level of 10 breeding pairs of wolves and 100 wolves in either Montana or Idaho at the end of the year; (2) if the wolf population segment in Montana or Idaho falls below 15 breeding pairs or 150 wolves at the end of the year in either of those States for 3 consecutive years; or (3) if a change in State law or management objectives would significantly increase the threat to the wolf population. All such reviews would be made available for public review and comment, including peer review by select species experts. Additionally, if any of these scenarios occurred during the mandatory 5-year post-delisting monitoring period, the post-delisting monitoring period would be extended 5 additional years from that point. If Wyoming were to develop a Service-approved regulatory framework it would be delisted in a separate rule and that proposed rule would contain additional post-delisting monitoring criteria for Wyoming.

Any such status review would analyze status relative to the definition of threatened or endangered considering the 5 factors outlined in section 4(a)(1). If, at any time, data indicate that protective status under the Act should be reinstated, we can initiate listing procedures, including, if appropriate, emergency listing. If emergency listing was instituted, we would then have 240 days to complete a conventional listing rule before the protections of the emergency rule would expire.

Funding for government programs is never certain at any level, but the funding to support wolf management activities of the various Federal and State agencies in the NRM has been consistently obligated for the past 20 years and we have a high level of confidence that the resources necessary to carry out the monitoring and management programs will continue for the foreseeable future. We may provide Federal funding for Federal monitoring requirements.

Use of Section 6 Agreements for States Outside the NRM DPS

Issue 56: Our proposal solicited comments regarding our intention to use section 6 agreements to allow States outside the NRM DPS with Service-approved wolf management plans to assume management of listed wolves, including nonlethal and lethal control of problem wolves. Some commenter found this approach was inappropriate while others commended the idea.

Response 56: This issue is not directly related to delisting in the NRM DPS and has been removed from this final rule.

Miscellaneous Issues Not Germane to This Rulemaking

Issue 57: Some commenters pointed out the positive and negative economic impacts of wolves, especially related to tourism in YNP, livestock depredation, and competition with hunters for surplus big game. Many people believed wolf damage to livestock and big game populations was increasing and becoming much more of an economic burden.

Response 57: Under the Act, listing decisions are not to consider economic factors. That said, we believe wolf-related tourism in places like YNP will not be affected by delisting. Additionally, State management will reduce economic losses caused by livestock depredation and competition with hunters for wild ungulates.

Issue 58: Many members of the public commented on the timing of this regulation. Most thought this final determination was being rushed. Several commenters suggested that we postpone a final determination until Wyoming revises its regulatory framework including the passage of new wolf management legislation. Some commenters suggested that we should not finalize this regulation until final 2008 wolf population data is available.

Response 58: Section 4(b)(6)(A) of the Act indicates that we should publish final rules within one year of proposed rules. Section 4(b)(1)(A) requires that we make such determinations solely on the best scientific and commercial information available. Given our statutory directive to make determinations within one year and instruction to consider ''available'' information, we felt further delay was not prudent. Our development of previous **Federal Register** documents allowed for this final rule to be prepared in much shorter timeframes than are typical for federal rulemaking.

Furthermore, delisting of the NRM wolf population has been delayed for many years as we waited and encouraged Wyoming to develop a regulatory framework that would conserve a recovered wolf population and could withstand legal challenge. It would be even more unfair to the other States, who have done their part, to wait even longer on possible future actions by Wyoming. We hope to remove the Act's protections in Wyoming once the State has an adequate regulatory framework in place. This rule includes 2008 data.

Issue 59: Several commenters, including Wyoming, opined that we should have started the rulemaking process over again (i.e., reproposed delisting) following the remand and vacatur of our previous final rule. A few commenters expressed confusion over what was being proposed. Specifically, they stated that ''To satisfy the Administrative Procedure Act's requirements for notice and comment rulemaking, interested parties must not be expected to 'divine [the Agency's] unspoken thoughts' (*Ariz. Pub. Serv. Co.* v. *EPA*, 211 F.3d 1280, 1299 (D.C. Cir. 2000)).''

Response 59: The October 14, 2008 U.S. District Court order remanded and vacated our final rule. All other documents associated with this rulemaking remained in place. Thus, reproposing this action was unnecessary.

We believe our February 8, 2007, (72 FR 6106) delisting proposal and the October 28, 2008, (73 FR 63926) notice reopening the comment period were clear in what we were proposing. Simply, we proposed to identify a NRM gray wolf DPS and remove most or all this DPS from the list of threatened and endangered wildlife. As noted in the proposal, if Wyoming failed to develop a management regime to adequately conserve wolves, we would retain the Act's protections in a significant portion of the range in the Wyoming portion of the NRM DPS. Our October 28, 2008, (73 FR 63926) notice reopening the comment period, summarized numerous flaws in Wyoming's wolf management framework. This notice (73 FR 63926, October 28, 2008) also noted that all documents relevant to evaluating the adequacy of Wyoming's regulatory mechanisms, including Wyoming State law, their wolf management plan, their implementing regulations (Wyoming Chapter 21), and other supporting information, were available on our website at: *http://westerngraywolf.fws.gov*. When Wyoming issued emergency regulations and a draft revised wolf management plan on October 27, 2008, we immediately posted online. Failure to remedy the adequacy of their regulatory framework resulted in our decision to retain the Act's protections in Wyoming.

Issue 60: Some commenters thought the recovery program illegally restored the wrong subspecies of wolf to Montana, Idaho, and Wyoming.

Response 60: In the mid-1980's, naturally dispersing wolves from Canada began to form packs in northwestern Montana. In 1995 and 1996, wolves were reintroduced to YNP and Central Idaho. For the nonessential-experimental areas, we selected donor wolves that had the greatest chance of resulting in a successful reintroduction program (Service 1994, p. 5–89). Specifically, we selected wolves living in habitat and feeding on prey most similar to those of the reintroduction areas (Service 1994, p. 5–89). Our 1994 EIS noted that wolf populations that historically inhabited the Yellowstone and central Idaho area were slightly smaller and contained fewer black color phase individuals than the more northern Canadian wolves that were dispersing southward and occupying Montana (Service 1994, p. 5–106). At the time, the 1994 EIS noted that recent molecular investigations indicated that gray wolves throughout North America were all one subspecies of gray wolf (Service 1994, p. 5–106). The EIS went on to say that only red wolves and Mexican wolves were genetically distinct at the molecular level (Service 1994, p. 5–106). Resolution of species' subspecific taxonomy remains elusive as the science continues to evolve (Hall 1984, pp. 2–11; Service 1994, pp. 1–21–22; Brewster and Fritts 1995, p. 353; Nowak 1995, p. 375; Nowak 2003, pp. 248–50; Wayne and Vila 2003, pp. 223–4; Leonard *et al.* 2005; p. 1; Leonard and Wayne 2007, p. 1). Legally, the subspecies issue remains irrelevant, as the gray wolf has been listed at the species level in the lower 48 States since 1978.

Issue 61: Many comments were made on issues that were not related to or affected by this rulemaking. Most often these issues involved: Strongly held personal opinions or perceptions about Federal, State, or Tribal government or authorities; property rights; mistrust of political leadership, environmentalists and/or judges; methods of take; risks to human safety; negative affects of wolves on elk and deer herds, hunting, State wildlife agency budgets, outfitting, or livestock production; negative affect of this action to tourism; ecosystem restoration; the U.S. Constitution; what would Jesus do; wildlife management in general; wolves and wolf management; and modifications to the NRM experimental population special 10(j) rule.

Response 61: We respect these opinions, but they are beyond the scope of this rulemaking.

Summary of Factors Affecting the Species

Section 4 of the Act and its implementing regulations (50 CFR part 424) set forth the procedures for listing, reclassifying, or removing species from listed status. ''Species'' is defined by the Act as including any species or subspecies of fish, wildlife, or plant, and any distinct vertebrate population segment of fish or wildlife that interbreeds when mature (16 U.S.C. 1532(16)). Under 50 CFR 424.11(d), we may remove the protections of the Act if the best available scientific and commercial data substantiate that the species is neither endangered nor threatened for the following reasons: (1) The species is extinct; (2) the species has recovered; or (3) the original scientific data used at the time the species was classified were in error.

A species may be delisted as recovered only if the best scientific and commercial data available indicate that it is no longer endangered or threatened. Determining whether a species meets the recovered definition requires consideration of the five categories of threats specified in section 4(a)(1) of the Act. For species that are already listed as endangered or threatened, this analysis of threats is an evaluation of both the threats currently facing the species and the threats that are reasonably likely to affect the species in the foreseeable future following the delisting or downlisting and the removal or reduction of the Act's protections.

Under section 3 of the Act, a species is ''endangered'' if it is in danger of extinction throughout all or a ''significant portion of its range'' and is ''threatened'' if it is likely to become endangered within the foreseeable future throughout all or a ''significant portion of its range.'' The word ''range'' in the phrase ''significant portion of its range'' refers to the range in which the species currently exists. For the purposes of this rule, ''range'' includes all of the NRM DPS (as identified in Factor A below and illustrated in Figure 1).

Evaluating whether the species should be considered threatened or endangered in all or a significant portion of its range is a multiple-step analysis. If we determine that the species is endangered throughout all of its range, we list it as endangered throughout its range and no further analysis is necessary. If not, we then evaluate if the species meets the definition of threatened throughout all of its range. If the species is threatened in all of its range, we list the species as threatened and consider if any significant portions of its range warrant listing as endangered. If we determine that the species is not threatened or endangered in all of its range, we consider whether any significant portions of its range warrant consideration as threatened or endangered. If we determine that the species is threatened or endangered in a significant portion of its range, the provisions of the Act would only apply to the significant portion of the species' range where it is threatened or endangered.

Foreseeable future is defined by the Services on a case-by-case basis, taking into consideration a variety of species-specific factors such as lifespan, genetics, breeding behavior, demography, threat projection timeframes, and environmental variability. ''Foreseeable'' is commonly viewed as ''such as reasonably can or should be anticipated: Such that a person of ordinary prudence would expect it to occur or exist under the circumstances'' (Merriam-Webster's Dictionary of Law 1996: *Western Watershed Project* v. *Foss* (D. Idaho 2005; CV 04–168–MHW). For the NRM DPS, the foreseeable future differs for

each factor potentially affecting the DPS. It took a considerable length of time for public attitudes and regulations to result in a social climate that promoted and allowed for wolf restoration in the WGL DPS and NRM DPS. The length of time over which this shift occurred, and the ensuing stability in those attitudes, give us confidence that this social climate will persist for the foreseeable future in the portion of the DPS which we are removing from ESA protections. Available habitat and potential future distribution models (Carroll *et al.* 2003, 536; Carroll *et al.* 2006, Figure 6) predict out about 30 years. For some threat factors, a longer time horizon may be appropriate. In our consideration of genetics, we reviewed a paper that looked 100 years into the future (vonHoldt *et al.* 2007). When evaluating the available information, with respect to foreseeable future, we take into account reduced confidence as we forecast further into the future.

The following analysis examines all five factors currently affecting, or that are likely to affect, the NRM gray wolf DPS within the foreseeable future.

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

The NRM DPS is approximately 980,803 km² (378,690 mi²) and includes 402,606 km² (155,447 mi²) of Federal land (41 percent); 49,803 km² (19,229 mi²) of State land (5 percent); 32,942 km² (12,719 mi²) of Tribal land (3 percent); 427,998 km² (165,251 mi²) of private land (44 percent) (the remaining area is either water or lands in Washington that were not categorized into ownership in the geographic information system layers we analyzed). The DPS contains large amounts of three Ecoregion Divisions—Temperate Steppe (prairie) (312,148 km² [120,521 mi²]); Temperate Steppe Mountain (forest) (404,921 km² [156,341 mi²]); and Temperate Desert (high desert) (263,544 km² [101,755 mi²]) (Bailey 1995, p. iv).

The following analysis focuses on suitable habitat (areas that have a 50 percent or greater change of supporting breeding pairs or persistent wolf packs) within the DPS and currently occupied areas. Then, unsuitable habitat is examined. Habitat suitability is based on biological features which impact the ability of wolf packs to persist. A number of threats to habitat are examined including increased human populations and development (including oil and gas), connectivity, ungulate populations, and livestock grazing.

Suitable Habitat—Wolves once occupied or transited all of the NRM DPS. However, much of the wolf's historical range within this area has been modified for human use and is no longer suitable habitat to support wolf packs and wolf breeding pairs. We have reviewed the quality, quantity, and distribution of habitat relative to the biological requirements of wolves. In doing so we reviewed two models, Oakleaf *et al.* (2006, pp. 555–558) and Carroll *et al.* (2003, pp. 536–548; 2006, pp. 27–31), to help us gauge the current amount and distribution of suitable wolf habitat in the NRM. Both models ranked areas as suitable habitat if they had characteristics that indicated they might have a 50 percent or greater chance of supporting wolf packs. Suitable wolf habitat in the NRM was typically characterized in both models as public land with mountainous, forested habitat that contains abundant year-round wild ungulate populations, low road density, low numbers of domestic livestock that are only present seasonally, few domestic sheep, low agricultural use, and few people. Unsuitable wolf habitat was typically just the opposite (i.e., private land, flat open prairie or desert, low or seasonal wild ungulate populations, high road density, high numbers of year-round domestic livestock including many domestic sheep, high levels of agricultural use, and many people). Despite their similarities, these two models had substantial differences in the area analyzed, layers, inputs, and assumptions. As a result, the Oakleaf *et al.* (2006, p. 559) and Carroll *et al.* (2006, p. 33) models predicted different amounts of theoretically suitable wolf habitat in areas examined by both models (i.e., portions of Montana, Idaho, and Wyoming).

Oakleaf's model was a more intensive effort that looked at potential wolf habitat in Idaho, Montana, and Wyoming (Oakleaf *et al.* 2005, p. 555). It used roads accessible to two-wheel and four-wheel vehicles, topography (slope and elevation), land ownership, relative ungulate density (based on State harvest statistics), cattle (*Bos sp.*) and sheep density, vegetation characteristics (ecoregions and land cover), and human density to comprise its geographic information system layers. Oakleaf analyzed the characteristics of areas occupied and not occupied by NRM wolf packs through 2000 to predict what other areas in the NRM might be suitable or unsuitable for future wolf pack formation (Oakleaf *et al.* 2005, p. 555). In total, Oakleaf *et al.* (2006, p. 559) ranked 170,228 km² (65,725 mi²) as suitable habitat in Montana, Idaho, and Wyoming.

Carroll's model analyzed a much larger area (all 12 western States and northern Mexico) in a less specific way (Carroll *et al.* 2006, pp. 27–31). Carroll's model used density and type of roads, human population density and distribution, slope, and vegetative greenness to estimate relative ungulate density to predict associated wolf survival and fecundity rates (Carroll *et al.* 2006, p. 29). The combination of a geographic information system model and wolf population parameters were used to develop estimates of habitat theoretically suitable for wolf pack persistence. In addition, Carroll predicted the potential effect on suitable wolf habitat of increased road development and human density expected by 2025 (Carroll *et al.* 2006, pp. 30–31). Within the proposed DPS, Carroll *et al.* (2006, pp. 27–31) ranked 277,377 km² (107,096 mi²) as suitable including 105,993 km² (40,924 mi²) in Montana; 82,507 km² (31,856 mi²) in Idaho; 77,202 km² (29,808 mi²) in Wyoming; 6,620 km² (2,556 mi²) in Oregon; 4,286 km² (1,655 mi²) in Utah; and 769 km² (297 mi²) in Washington. Approximately 96 percent of the suitable habitat (265,703 km² (102,588 mi²)) within the DPS occurred in Montana, Idaho, and Wyoming. According to the Carroll model, approximately 28 percent of the NRM DPS would be ranked as suitable habitat (Carroll *et al.* 2006, pp. 27–31).

The Carroll *et al.* (2006, pp. 31–34) model tended to be more generous in identifying suitable wolf habitat under current conditions than the Oakleaf (*et al.* 2006, pp. 558–560) model or that our field observations indicate is realistic. But Carroll's model provided a valuable relative measure across the western United States upon which comparisons could be made. The Carroll model did not incorporate livestock density into its calculations as the Oakleaf model did (Carroll *et al.* 2006, pp. 27–29; Oakleaf *et al.* 2005, p. 556). Thus, that model did not consider those conditions where wolf mortality is high and habitat unsuitable because of chronic conflict with livestock. During the past 20 years, wolf packs have been unable to persist in areas intensively used for livestock production, primarily because of agency control of problem wolves and illegal killing.

Many of the more isolated primary habitat patches that the Carroll model predicted as currently suitable were predicted to be unsuitable by the year 2025, indicating they were likely on the lower end of what ranked as suitable habitat in that model (Carroll *et al.* 2006, p. 32). Because these areas were typically too small to support breeding

pairs and too isolated from the core population to receive enough dispersing wolves to overcome high mortality rates, we do not believe they are currently suitable habitat based upon on our data on wolf pack persistence for the past 20 years (Bangs 1991, p. 9; Bangs *et al.* 1998, p. 788; Service *et al.* 1999–2009, Figure 1).

Despite the substantial differences in each model's analysis area, layers, inputs, and assumptions, both models predicted that most suitable wolf habitat in the NRM was in northwestern Montana, central Idaho, and the GYA, which is the area currently occupied by the NRM wolf population. These models are useful in understanding the relative proportions and distributions of various habitat characteristics and their relationships to wolf pack persistence. Both models generally support earlier Service predictions about wolf habitat suitability in the NRM (Service 1980, p. 9; 1987, p. 7; 1994, p. vii). Because theoretical models only define suitable habitat as those areas that have characteristics with a 50 percent or more probability of supporting wolf packs, the acreages of suitable habitat that they indicate can be successfully occupied are only estimates.

The Carroll *et al.* (2006, p. 25) model also indicated that these three areas had habitat suitable for dispersal between them and it would remain relatively intact in the future. However, northwest Montana and Idaho were much more connected to each other and the wolf population in Canada than to the GYA and Wyoming (Oakleaf *et al.* 2005, p. 554). Collectively the three core areas are surrounded by large areas of habitat unsuitable for pack persistence. We note that habitat that is unsuitable for pack persistence may be important for connectivity between areas that are suitable for pack persistence.

Overall, we evaluated data from a number of sources on the location of suitable wolf habitat in developing our estimate of currently suitable wolf habitat in the NRM. Specifically, we considered the recovery areas identified in the 1987 wolf recovery plan (Service 1987, p. 23), the primary analysis areas analyzed in the 1994 EIS for the GYA (63,700 km^2 [24,600 mi^2]) and central Idaho (53,600 km^2 [20,700 mi^2]) (Service 1994, p. iv), information derived from theoretical models by Carroll *et al.* (2006, p. 25) and Oakleaf *et al.* (2006, p. 554), our nearly 20 years of field experience managing wolves in the NRM, and locations of persistent wolf packs and breeding pairs since recovery has been achieved. Collectively, this evidence leads us to concur with the Oakleaf *et al.* (2006, p. 559) model's predictions that the most important habitat attributes for wolf pack persistence are forest cover, public land, high elk density, and low livestock density. Therefore, we believe that Oakleaf's calculations of the amount and distribution of suitable wolf habitat available for persistent wolf pack formation, in the parts of Montana, Idaho, and Wyoming analyzed, represents the most reasonable prediction of suitable wolf habitat in Montana, Idaho, and Wyoming.

The area we conclude that is suitable habitat is depicted in Oakleaf *et al.*'s (2006) map on page 559. Generally, suitable habitat is located in western Montana west of I–15 and south of I–90; Idaho north of I–84; and northwest Wyoming (see figure 1 in 73 FR 63926, October 28, 2008). A comparison of actual wolf pack distribution in 2006 (Service *et al.* 2007, Figure 1) and Oakleaf *et al.*'s (2006, p. 559) prediction of suitable habitat indicates that nearly all suitable habitat in Montana, Idaho, and Wyoming is currently occupied and areas predicted to be unsuitable remain largely unoccupied.

Although Carroll determined there may be some (4 percent) potentially suitable wolf habitat in the NRM DPS outside of Montana, Idaho, and Wyoming, we believe it is marginally suitable at best and is insignificant to NRM wolf population recovery because it occurs in small isolated fragmented areas. While some areas predicted to be unsuitable habitat in Montana, Idaho, and Wyoming have been temporarily occupied and used by wolves or even packs, we still consider them as largely unsuitable habitat. Generally, wolf packs in such areas have failed to persist long enough to be categorized as breeding pairs and successfully contribute toward recovery. Therefore, we consider such areas as containing unsuitable habitat and find that dispersing wolves attempting to colonize those areas are unlikely to form breeding pairs or contribute to population recovery.

Unoccupied Suitable Habitat—Habitat suitability modeling indicates that the three NRM core recovery areas are atypical of other habitats in the western United States because suitable habitat in those core areas occur in such large contiguous blocks (Service 1987, p. 7; Larson 2004, p. 49; Carroll *et al.* 2006, p. 35; Oakleaf *et al.* 2005, p. 559). Without core refugia areas like YNP or the central Idaho wilderness that provide a steady source of dispersing wolves, other potentially suitable wolf habitat is not likely to be capable of sustaining wolf breeding pairs. Some habitat ranked by models as suitable adjacent to core refugia may be able to support wolf breeding pairs, while other habitat farther away from a strong source of dispersing wolves may not be able to support persistent packs. This fact is important when considering suitable habitat as defined by the Carroll (*et al.* 2006, p. 30) and Oakleaf (*et al.* 2006, p. 559) models, because wolf populations can persist despite very high rates of mortality only if they have high rates of immigration (Fuller *et al.* 2003, p. 183). Therefore, model predictions regarding habitat suitability does not always translate into successful wolf occupancy and wolf breeding pairs.

Strips and smaller (less than 2,600 km^2 [1,000 mi^2]) patches of theoretically suitable habitat (Carroll *et al.* 2006, p. 34; Oakleaf *et al.* 2005, p. 559) (typically, isolated mountain ranges) often possess higher mortality risk for wolves because of their enclosure by, and proximity to, unsuitable habitat with a high mortality risk. In addition, pack territories often form along distinct geological features (Mech and Boitani 2003, p. 23), such as the crest of a rugged mountain range, so useable space for wolves in isolated long narrow mountain ranges may be reduced by half or more. 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, pp. 400–401). 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 species with large territories, like wolves, because they are more likely to encounter surrounding unsuitable habitat (Woodroffe and Ginsberg 1998, p. 2128). Because of edge effects, some habitat areas outside the core areas may rank as suitable in models, but are unlikely to actually be successfully occupied by wolf packs. For these reasons, we believe that the NRM wolf population will remain anchored by the three recovery areas. These core population segments will continue to provide a constant source of dispersing wolves into surrounding areas, supplementing wolf packs and breeding pairs in adjacent, but less secure suitable habitat.

Currently Occupied Habitat—We calculated the area currently occupied by the NRM wolf population by drawing a line around the outer points of radio-telemetry locations of all known wolf pack territories in 2005 (Service *et al.* 2006, Figure 1; 71 FR 6634, February 8, 2006, p. 6640). We defined occupied wolf habitat as that area confirmed as

being used by resident wolves to raise pups or that is consistently used by two or more territorial wolves for longer than 1 month (Service 1994, pp. 6:5–6). This approach includes all intervening areas including suitable or unsuitable habitat. Typically by the end of the year, only 50 percent of packs meet the criteria to be classified as breeding pairs. The overall distribution of wolf packs has been similar since 2000, despite a wolf population that has more than doubled (Service *et al.* 2001–2009, Figure 1; Bangs *et al.* in press). This pattern persisted in 2006, 2007, and 2008. Since the wolf population has saturated most suitable habitat in the NRM DPS, significant growth in the population's outer distribution is unlikely. This final rule relied upon recent wolf monitoring data which has changed little in recent years (see Figure 1).

We included areas between the core recovery segments as occupied wolf habitat because they are important for demographic and genetic connectivity. While these areas are no longer capable of supporting persistent wolf packs, dispersing wolves routinely travel through those areas and packs occasional occupy them (Service 1994, pp. 6:5–6; Bangs 2002, p. 3; Jimenez *et al.* 2008d). These areas include 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 western Montana. Important dispersal areas also include parts of western Wyoming outside the current State trophy game boundary, such as the Wyoming Range adjacent to Idaho and valleys north of Kemmerer. Dispersing wolves from Idaho that bred in the GYA likely crossed this area and survived during the winter breeding season, resulting in natural genetic connectivity.

As of the end of 2004, we estimated approximately 275,533 km^2 (106,384 mi^2) of occupied habitat in parts of Montana (125,208 km^2 [48,343 mi^2]), Idaho (116,309 km^2 [44,907 mi^2]), and Wyoming (34,017 km^2 [13,134 mi^2]) (Service *et al.* 2005, Figure 1). This pattern persisted in 2005–2008 (Service *et al.* 2006–2009). Although currently occupied habitat includes some prairie (4,488 km^2 [1,733 mi^2]) and some high desert (24,478 km^2 [9,451 mi^2]), wolf packs have not used these habitat types successfully (Service *et al.* 2005–2009, Figure 1). Since 1986, no persistent wolf pack has had a majority of its home range in high desert or prairie habitat. Landownership in the occupied habitat area is 183,485 km^2 (70,844 mi^2) Federal (67 percent); 12,217 km^2 (4,717 mi^2) State (4.4 percent); 3,064 km^2 (1,183 mi^2) Tribal (1.7 percent); and 71,678 km^2 (27,675 mi^2) private (26 percent) (Service *et al.* 2005–2009, Figure 1).

We determined that the current wolf population is a three-segment metapopulation and that the overall area used by persistent wolf packs has not significantly expanded since the population achieved its recovery goal. While there maybe occasional exceptions, stagnant outer distribution patterns for the past 6 years indicate there is probably limited suitable habitat for the NRM wolf population to expand significantly beyond its current outer boundaries. Carroll's model predicted that 165,503 km^2 (63,901 mi^2) of suitable habitat (62 percent) was within the occupied area; however, the model's remaining potentially suitable habitat (38 percent) was often fragmented, in smaller, more isolated patches (Carroll *et al.* 2006, p. 35) and to date has not been occupied by breeding pairs .

The NRM wolf population occupies nearly 100 percent of the recovery areas recommended in the 1987 recovery plan (i.e., central Idaho, the GYA, and the northwestern Montana) (Service 1987, p. 23) and nearly 100 percent of the primary analysis areas (the areas where suitable habitat was predicted to exist and the wolf population would live) analyzed for wolf reintroduction in central Idaho and the GYA (Service 1994, p. 1:6). This pattern will continue because management plans for public lands in the NRM DPS will result in forest cover, high ungulate densities, low to moderate road and livestock densities, and other factors critical to maintaining suitable wolf habitat.

Potential Threats Affecting Habitat or Range—Establishing a recovered wolf population in the NRM did not require land-use restrictions or curtailment of traditional land-uses because there was enough suitable habitat, enough wild ungulates, and sufficiently few livestock conflicts to recover wolves under existing conditions (Bangs *et al.* 2004, pp. 95–96). We do not believe that any traditional land-use practices in the NRM need be modified to maintain a recovered NRM wolf population into the foreseeable future. We do not anticipate overall habitat changes in the NRM occurring at a magnitude that will threaten wolf recovery in the foreseeable future because 71 percent of the occupied habitat is in public ownership that is managed for multiple uses that are complementary with suitable wolf habitat, and maintenance of viable wolf populations (Carroll *et al.* 2003, p. 542; Oakleaf *et al.* 2005, p. 560).

The GYA and central Idaho recovery areas, 63,714 km^2 (24,600 mi^2) and 53,613 km^2 (20,700 mi^2), respectively, are primarily composed of public lands (Service 1994, p. iv) and are the largest contiguous blocks of suitable habitat within the NRM DPS. Public lands in National Parks, wilderness, roadless areas and large blocks of contiguous mountainous forested habitat are largely unavailable and/or unsuitable for intensive development. Central Idaho and the GYA provide secure wolf habitat and abundant ungulate populations, with about 99,300 ungulates in the GYA and 241,400 in central Idaho (Service 1994, pp. viii–ix). These areas are considered secure because they are not available for development due to their land-use classifications, management guidelines for other species (e.g., grizzly bears), habitat, access, and geological characteristics (Service 1993, 1996, 2007; Servheen *et al.* 2003; U.S. Forest Service 2006). Thus, they will continue to provide optimal suitable habitat for a resident wolf population and will be a dependable source of dispersing wolves to help maintain genetic connectivity and a viable wolf population in the NRM (Service 1994, p. 1:4). The central Idaho recovery area has 24,281 km^2 (9,375 mi^2) of designated wilderness at its core (Service 1994, p. 3:85). The GYA recovery area has a core including over 8,094 km^2 (3,125 mi^2) in YNP and about 16,187 km^2 (6,250 mi^2) of designated wilderness (although these areas are less useful to wolves, except seasonally, due to high elevation) (Service 1994, p. 3:45). These areas are in public ownership that is not suitable and/or not available for human development of a scale that could possibly affect its overall suitability for wolves, and no foreseeable habitat-related threats would prevent them from supporting a wolf population that exceeds recovery levels.

While the northwestern Montana recovery area (basically west of I–15 and north of I–90 in Montana and Idaho) (84,800 km^2 (33,386 mi^2)) also has a core of protected suitable habitat (Glacier National Park, the Bob Marshal Wilderness Complex, and extensive Forest Service lands), it is not as high quality or as contiguous as that in either central Idaho or GYA (Smith *et al.* 2008). The primary reason for this is that many ungulates do not winter throughout the Park or Wilderness areas 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.* 1989–2008, Figure 1; Murrey *et al.* submitted 2008). This mix exposes wolves to high levels of mortality, and

thus this area supports smaller and fewer wolf packs. Wolf dispersal into northwestern Montana from the more stable resident packs in the core protected area (largely the North Fork of the Flathead River along the eastern edge of Glacier National Park and the few large river drainages in the Bob Marshall Wilderness Complex) and the abundant National Forest Service lands largely used for recreation and timber production rather than livestock production helps to maintain that segment of the NRM wolf population (Bangs *et al.* 1998, p. 786). Wolves also disperse into northwestern Montana from central Idaho and Canada and several packs have trans-boundary territories, helping to maintain the NRM population (Boyd *et al.* 1995, p. 136; Service 2002–2009, Figure 1). 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 liberal hunting and agency control (Bangs *et al.* 1998, p. 790). Despite mortalities that occur in Canada, the trans-boundary movements of wolves and wolf packs that led to the original establishment of wolves in Montana connects the wolf population in the NRM to the much larger wolf population in Canada 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.

An 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 (in the GYA) bison. Bighorn sheep, mountain goats, and pronghorn antelope also are common but not important, at least to date, as wolf prey. In total, 100,000 to 250,000 wild ungulates are estimated in each State where wolf packs currently exist (Service 1994, pp. viii–ix). The States in the NRM DPS have successfully managed resident ungulate populations for decades. State ungulate management plans, discussed in Factor D below, commit them to maintain ungulate populations at densities that will continue to support a recovered wolf population well into the foreseeable future (See Idaho 2007, p. 1–2; Curtis 2007, p. 14–21 as an examples of such plans).

Last year, 2008 marked the first year since our reintroductions began that the NRM wolf population did not grow by 20 percent. We believe this slowing growth rate is the result of the NRM wolf population reaching carrying capacity. Human-caused mortality in 2008 was not high enough to explain all the reduced growth in the population. At carrying capacity natural factors such as disease, social strife, and food limitations begin to help regulate wolf populations. As demonstrated by the NRM DPS's suspected carrying capacity, there is sufficient suitable habitat to maintain the NRM wolf population well above recovery levels but not significantly higher than current levels.

Cattle and sheep are at least twice as numerous as wild ungulates even on public lands (Service 1994, p. viii). Most wolf packs have at least some interaction with livestock. Wolves and livestock can live near one another for extended periods of time without significant conflict if agency control prevents the behavior of chronic livestock depredation from becoming widespread in the wolf population. Through active management, most wolves learn that livestock can not be successfully attacked and do not view them as prey. However, when wolves and livestock mix, some livestock and some wolves will be killed. Conflict between wolves and livestock has resulted in the average annual removal of 8 to 14 percent of the NRM wolf population (Bangs *et al.* 1995, p. 130; Bangs *et al.* 2004, p. 92; Bangs *et al.* 2005, pp. 342–344; Service *et al.* 2009, Tables 4, 5; Smith *et al.* 2008, p. 1). Such control promotes occupancy of suitable habitat in a manner that minimizes damage to private property and fosters public support to maintain recovered wolf populations in the NRM DPS without threatening the NRM wolf population.

We do not foresee a substantial increase in livestock abundance across the NRM that would result in increased mortality. The opposite trend has been occurring. In recent years, about 200,000 hectares (500,000 acres) of public land grazing allotments have been purchased and retired in areas of chronic conflict between livestock and large predators, including wolves (Fischer 2008). Assuming adequate regulation of other threat factors (discussed below), we do not believe the continued presence of livestock will in any meaningful way threaten the recovered status of the NRM DPS in the foreseeable future.

Within the GYA, human populations are expected to increase (Carroll 2006). In six northwest Wyoming counties most used by wolves, the human population is projected to increase by roughly 15,000 residents between 2000 and 2020 (from 105,215 in 2000 to 120,771 by 2020) (Wyoming Department of Administration and Information Economic Analysis Division 2005). The Montana GYA counties are expected to increase by roughly 35,000 people during this same time (from 120,934 in 2000 to 154,800 by 2020) (NPA Data Services 2002). We anticipate similar levels of population growth in the remaining portions of the DPS given that the West, as a region, is projected to increase at rates faster than any other region (U.S. Census Bureau Population Division 2005).

As human populations increase associated impacts will follow. We expect the region will see: Increased growth and development including conversion of private low-density rural lands to higher density urban and suburban development; accelerated road development and increasing amounts of transportation facilities (pipelines and energy transmission lines); additional resource extraction (primarily oil and gas, coal, and wind development in certain areas); and added recreation on public lands (Robbins 2007). Despite efforts to minimize impacts to wildlife (Brown 2006, p. 1–3), some development will make some areas of the NRM less suitable for wolf occupancy. However, we expect these impacts will be minimal as sufficient habitat is secure.

Wolves are one of the most adaptable large predators in the world and are unlikely to be substantially impacted by any threat except human persecution (Fuller *et al.* 2003, p. 163; Boitani 2003, p. 328–330). Land-use restrictions on human development were not necessary to recover the wolf population. Even active wolf dens can be quite resilient to nonlethal disturbance by humans (Frame *et al.* 2007, p. 316). The vast majority of suitable wolf habitat and the current wolf population is secure in mountainous forested Federal public land (National Parks, wilderness, roadless areas, and lands managed for multiple uses by the U.S. Forest Service and Bureau of Land Management) that will not be legally available or suitable for intensive levels of human development. Furthermore, the range of wolves and grizzly bears overlap in many parts of Montana, Idaho and Wyoming and mandatory habitat guidelines on public lands for grizzly bear conservation guarantee and far exceed necessary criteria for maintaining suitable habitat for wolves (for an example, see U.S. Department of Agriculture (USDA) 2006). Current and projected levels of human use of public lands will be managed to limit resource impacts by the management plans of the appropriate land management agencies or governments.

Most types of intensive human development predicted in the future will occur in areas that have already

been extensively modified by human activities and are unsuitable wolf habitat (Wyoming 2005, Appendix III). In terms of mineral extraction activities, such development is likely to continue to be focused at lower elevation, private lands and in open habitats, and outside of currently suitable and currently occupied wolf habitat (Robbins 2007). Development on private land near suitable habitats will continue to expose wolves to more conflicts and higher risk of human-caused mortality. However, the rate of conflict (now approximately 23 percent mortality per year) is well within the wolf population's biological mortality threshold (30 to 50 percent), especially given the large amount of secure habitat that will support a recovered wolf population and will provide a reliable and constant source of dispersing wolves. Furthermore, management programs (Linnell *et al.* 2001, p. 348), research and monitoring, and outreach and education about living with wildlife can somewhat reduce such impacts.

Modeling exercises also can provide some insights into future land-use development patterns. While these models have weaknesses, such as an inability to accurately predict economic upturns or downturns, uncertainty regarding investments in infrastructure that might drive development (such as roads, airports, or water projects), and an inability to predict open-space acquisitions or conservation easements, we nevertheless think that such models are useful in adding to our understanding of likely development patterns. Carroll *et al.* (2003, p. 541; 2006, p. 31) predicted future wolf habitat suitability under several scenarios through 2025, including increased human population growth and road development. Similarly, in 2005, the Center for the West produced a series of maps predicting growth through 2040 for the West (Travis *et al.* 2005, pp. 2–7). These projections are available at: *http://www.centerwest.org/futures/west/2040.html*. These models predict very little development across occupied and suitable portions of the NRM DPS. Threats were not predicted to alter wolf habitat suitability in the NRM DPS nearly enough to cause the wolf population to fall below recovery levels in the foreseeable future or even significantly effect wolf dispersal between the recovery segments, including the GYA. In many areas within the NRM DPS (including northwest Montana, the GYA, and northeast Oregon), habitat suitability will be increased beyond current levels as roads on public lands are reduced, a process underway in the NRM (Carroll *et al.* 2006, p.25; Servheen *et al.* 2003; Service 1993, 1996, 2007; Brown 2006, 1–3).

We acknowledge habitat suitability for wolves will change over time with human development, activities, and attitudes, but not to the extent that it is likely to threaten wolf recovery. Therefore, we do not believe there is a need to limit or manage future human population growth for wolf conservation in the NRM. Wolf populations persist in many areas of the world that are far more developed than the NRM currently is or is likely to be in the foreseeable future (Boitani 2003, pp. 322–23). Current habitat conditions are adequate to support a wolf population well above minimal recovery levels and model predictions indicate that development in the NRM over the next 25 years is unlikely to change habitat in a manner that would threaten the NRM wolf population (Carroll *et al.* 2003, p. 544).

Furthermore, we do not expect any threats to habitat or range to meaningfully impact dispersal or connectivity. Wolves have exceptional dispersal abilities including the ability to disperse long-distances across vast areas of unsuitable habitat. Numerous lone wolves have already been documented to have successfully dispersed through these types of developed areas (Jimenez *et al.* 2008d). Thus, we believe wolves are among the least likely species of land mammal to face a serious threat from reduced connectivity related to projected changes in habitat.

At present, all three recovery areas appear sufficiently connected. There is more than enough habitat connectivity between occupied wolf habitat in Canada, northwestern Montana, and Idaho to ensure exchange of sufficient numbers of dispersing wolves to maintain demographic and genetic diversity in the NRM wolf metapopulation (Oakleaf *et al.* 2005, p. 559; Carroll *et al.* 2006, p. 32; Boyd *et al.* 2007; vonHoldt *et al.* 2007, p. 19). We have documented routine movement of radio-collared wolves across the nearly contiguous available suitable habitat between Canada, northwestern Montana, and central Idaho (Pletscher *et al.* 1991, p. 544; Boyd and Pletscher 1999, pp. 1095–1096; Sime 2007). In addition, there are several shared transborder packs, between Canada, Montana, and Idaho. While the GYA is the most isolated core recovery area within the NRM DPS (Oakleaf *et al.* 2005, p. 554; vonHoldt *et al.* 2007, p. 19), radio telemetry data demonstrate that the GYA is not isolated as at least one wolf naturally disperses into the GYA each year and at least 4 radio-collared non-GYA wolves have bred and produced offspring in the GYA in the past 12 years (1996–2008).

Within the foreseeable future, some habitat degradation will occur between the core recovery areas. Overall, we believe this will have only minimal impacts on foreseeable levels of dispersal and connectivity. Model predictions through 2025 (Carroll *et al.* 2003, p. 541; Carroll 2006, p. 32) and 2040 (Travis *et al.* 2005, pp. 2–5, 14–15; *http://www.centerwest.org/futures/west/2040.html*), in combination with our understanding of wolf dispersal capabilities, demonstrate the quantity, quality, and distribution of habitat, including consideration of intervening development, will remain more than sufficient to allow adequate levels of natural connectivity into the foreseeable future.

Thus, threats to habitat are unlikely to disrupt connectivity in the foreseeable future. Factor E provides a detailed evaluation of the adequacy of current and expected levels of genetic exchange as well as alternative approaches to genetic exchange should they ever become necessary (an outcome we believe is extremely unlikely). Factor D discusses the adequacy of available regulatory frameworks to ensure genetic exchange will be maintained.

Summary threats to Wolf Habitat—We do not foresee that impacts to habitat or range will occur at levels that will significantly affect wolf numbers or distribution, connectivity, or affect population recovery and long-term viability in the NRM. Occupied suitable habitat is secured by core recovery areas in northwestern Montana, central Idaho, and the GYA, including Wyoming. These areas include Glacier National Park, Grand Teton National Park, YNP, numerous U.S. Forest Service Wilderness Areas, and other State and Federal public lands. These areas will continue to be managed for high ungulate densities, moderate rates of seasonal livestock grazing, moderate-to-low road densities associated with abundant native prey, low potential for livestock conflicts, and security from excessive unregulated human-caused mortality. Secure portions of the NRM DPS will be able to support large wolf populations well into the foreseeable future.

Unsuitable habitat and small fragmented areas of suitable habitat outside of these core areas largely represent geographic locations where wolf breeding pairs would only persist in low numbers, if at all. Although such areas may historically have contained suitable habitat, wolf pack persistence

in these areas are not important or necessary for maintaining a viable, self-sustaining, and evolving representative wolf population in the NRM into the foreseeable future. Still, these areas may contribute to a healthy wolf population by facilitating dispersal between core recovery areas. The available data indicate that threats to habitat are unlikely to disrupt such connectivity in the foreseeable future.

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

While listed under the Act, gray wolves could not be legally killed or removed from the wild in the NRM for commercial, recreational (hunting, trapping), or educational purposes. In the NRM, about 3 percent of the wolves captured for scientific research, nonlethal control, and monitoring have been accidentally killed (Bangs *et al.* in press). Some wolves may have been illegally killed for commercial use of the pelts and other parts, but we believe illegal commercial trafficking in wolf pelts or wolf parts is rare. Illegal capture of wolves for commercial breeding purposes also is possible, but we have no evidence that it occurs in the NRM. We believe the prohibition against ''take'' provided for by Section 9 of the Act has discouraged and minimized the illegal killing of wolves for commercial or recreational purposes. Although Federal penalties under Section 11 of the Act will not apply if delisting is finalized other Federal laws will still protect wildlife in National Parks and on other Federal lands (Service 1994, pp. 1:5–9). In addition, Montana, Idaho, Wyoming (only in the trophy game area), Washington, Oregon, Utah, and the Tribes have similar laws and regulations that will protect wolves from overutilization for commercial, recreational, scientific, and educational purposes (this issue is also discussed in Factor D below). We believe these laws will continue to provide a strong deterrent to illegal killing of wolves by the public, except in Wyoming's predatory animal area, as they have been effective in State-led conservation programs for other resident wildlife such as black bears, mountain lions, elk, and deer. In addition, the State fish and game agencies, National Parks, other Federal agencies, and most Tribes have well-distributed experienced professional law enforcement officers to help enforce State, Federal, and Tribal wildlife regulations (See Factor D).

Scientific Research and Monitoring—From 1984 to 2008, the Service and our cooperating partners captured nearly 1,100 NRM wolves for monitoring, nonlethal control, and research purposes with 25 accidental deaths. If NRM wolves were delisted, the State, 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 laws, wolf management plans, and regulations (See Factor D and Post-Delisting Monitoring sections below). We expect that capture-caused mortality by Federal, State, and Tribal agencies, and universities conducting wolf monitoring, nonlethal control, and research will remain below 3 percent of the wolves captured, and will be an insignificant source of mortality to the wolf population.

Education—We are unaware of any wolves that have been removed from the wild for solely educational purposes in recent years. Wolves that are used for such purposes are typically privately-held captive-reared offspring of wolves that were already in captivity for other reasons and are not protected by the Act. 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 or Federal permits, except in Wyoming's predatory animal area; and would not substantially increase human-caused wolf mortality rates.

Commercial and Recreational Uses—This section primarily addresses the potential for hunting and trapping across the NRM DPS post-delisting. Other forms of human caused mortality are discussed under the discussion of human predation under Factor C.

Wolf populations can maintain themselves despite sustained human-caused mortality rates of between 30 and 50 percent per year (Keith 1983; Fuller *et al.* 2003, pp. 182–184). When populations are maintained below carrying capacity and natural mortality rates and self-regulation of the population remain low, human-caused mortality can replace up to 70 percent of natural mortality (Fuller *et al.* 2003, p. 186). Wolf pups can also be successfully raised by other pack members and breeding individuals can be quickly replaced by other wolves (Brainerd *et al.* 2008, p. 1). Collectively, these factors mean that wolf populations are quite resilient to human-caused mortality if it is adequately regulated.

Regulated hunting and trapping are traditional and effective wildlife management tools that can be applied to help achieve State and Tribal wolf management objectives (Bangs 2008). In the absence of the Act's protections, Montana, Idaho, and Wyoming, in the trophy game area, would use public harvest 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. Montana, Idaho, Wyoming and some Tribes in those States, would allow regulated public harvest of surplus wolves in the NRM wolf population for commercial and recreational purposes by regulated private and guided hunting and trapping. Such take and any commercial use of wolf pelts or other parts would be regulated by State or Tribal law (see discussion of State laws and plans under Factor D).

The regulated take of those wolves would not affect wolf population recovery or viability in Montana and Idaho because these States would allow such take only for wolves that are not needed to achieve the State's commitment to maintaining a recovered population (see Factor D below). If Montana and Idaho had implemented their planned hunt, the wolf population in Montana and Idaho would still be far in excess of recovered levels. In the trophy game areas of northwest Wyoming, if other sources of mortality had been adequately regulated, this level of hunter harvest would not threaten Wyoming's share of a recovered wolf populations; however, Wyoming's overall regulatory framework does not adequately regulate other sources of mortality. In the predatory area of Wyoming, commercial and recreational use would be unlimited and unregulated. This lack of regulation would not allow wolves to persist in predatory portions of the State. State laws in Washington, Oregon, and Utah do not currently allow public take of wolves for recreational or commercial purposes. These issues are discussed in much greater detail in Factor D below.

In summary, we determine scientific and educational take to remain insignificant factors in maintaining the NRM wolf population well above recovery levels well into the foreseeable future. Furthermore, we believe Idaho and Montana will adequately manage commercial and recreational use for the foreseeable future. Commercial and recreational use in Wyoming will not be adequately managed. These issues are discussed fully in Factor D below.

C. Disease or Predation

As discussed in detail below, a wide range of diseases may affect the NRM wolves. However, no diseases or parasites, even in combination, are of

such magnitude that the population is likely to become in danger of extinction in the foreseeable future. Similarly, predation does not pose a significant threat to the NRM wolf population. The rates of mortality caused by disease and predation are well within acceptable limits, and we do not expect those rates to change appreciably if NRM wolves are delisted. State plans commit to monitoring wolf health to ensure any new or new impacts caused by diseases or parasites are quickly detected. Natural predation on wolves is rare but predation by humans is a significant issue if not regulated. More information on disease and predation (including by humans) are discussed below.

Disease—The NRM wolves are exposed to a wide variety of diseases and parasites that are common throughout North America. Many diseases (viruses and bacteria, many protozoa and fungi) and parasites (helminthes and arthropods) have been reported for the gray wolf, and several of them have had significant, but temporary impacts during wolf recovery in the 48 conterminous States (Brand *et al.* 1995, p. 428; Kreeger 2003, pp. 202–214). 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, pp. 1:20–21).

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, p. 160). We fully anticipate that these diseases and parasites will follow the same pattern seen in other areas of North America (Brand *et al.* 1995, pp. 428–429; Bailey *et al.* 1995, p. 445; Kreeger 2003, pp. 202–204; Atkinson 2006, p. 1–7; Smith and Almberg 2007, 17–19; Johnson 1995a, b) and will not significantly threaten wolf population viability. The diseases and parasites of wolves are unlikely to effect human health and safety and most are already endemic in other wild carnivores and dogs. 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 (Atkinson 2006, p. 1–7). Should such an outbreak occur, human-caused mortality would be regulated over an appropriate area and time period to ensure wolf population numbers in the NRM DPS are maintained above recovery levels in those portions of the DPS.

Canine parvovirus (CPV) infects wolves, domestic dogs (*Canis familiaris*), foxes (*Vulpes vulpes*), coyotes, skunks (*Mephitis mephitis*), and raccoons (*Procyon lotor*). The population impacts of CPV occur via diarrhea-induced dehydration leading to abnormally high pup mortality (Wisconsin Department of Natural Resources 1999, p. 61). Clinical CPV is characterized by severe hemorrhagic diarrhea and vomiting; debility and subsequent mortality is a result of dehydration, electrolyte imbalances, and shock. CPV has been detected in nearly every wolf population in North America including Alaska (Bailey *et al.* 1995, p. 441; Brand *et al.* 1995, p. 421; Kreeger 2003, pp. 210–211; Johnson *et al.* 1994), and exposure in wolves is thought to be almost universal. Currently, nearly 100 percent of the wolves handled by MFWP (Atkinson 2006) and YNP (Smith and Almberg 2007, p. 18) had blood antibodies indicating nonlethal exposure to CPV. CPV might have contributed to low pup survival in the northern range of YNP in 1999. CPV was suspected to have done so again in 2005 and possibly 2008, but evidence points to canine distemper as being the primary cause of low pup survival during those years (Smith *et al.* 2006, p. 244; Smith 2008). Pup production and survival in YNP returned to normal levels after each event (Smith and Almberg 2007, p. 18–19). The impact of disease outbreaks to the overall NRM wolf population has been localized and temporary, as has been documented elsewhere (Bailey *et al.* 1995, p. 441; Brand *et al.* 1995, p. 421; Kreeger 2003, pp. 210–211). Despite these periodic disease outbreaks, the NRM wolf population increased at a rate of about 22 percent annually from 1996 to 2008 (Service *et al.* 2009, Table 4). Mech *et al.* (2008, p. 824) recently concluded CPV reduced pup survival, subsequent dispersal, and the overall rate of population growth in Minnesota (a population near carrying capacity in suitable habitat). It is possible that at carrying capacity the NRM population may be effected similarly and the overall rate of growth maybe reduced.

Canine distemper (CD) is an acute, fever-causing disease of carnivores caused by a virus (Kreeger 2003, p. 209). It is common in domestic dogs and some wild canids, such as coyotes and foxes in the NRM (Kreeger 2003, p. 209). The prevalence of antibodies to this disease in samples of wolf blood in North American wolves is about 17 percent (Kreeger 2003, p. 209), but varies annually and by specific location. Nearly 85 percent of Montana wolf blood samples analyzed in 2005 indicated nonlethal exposure to CD (Atkinson 2006). Similar results were found in YNP (Smith and Almberg 2007, p. 18). Mortality in wolves has been documented in Canada (Carbyn 1982, p. 109), Alaska (Peterson *et al.* 1984, p. 31; Bailey *et al.* 1995, p. 441), and in a single Wisconsin pup (Wydeven and Wiedenhoeft 2003, p. 7). CD is not a major mortality factor in wolves, because despite high exposure to the virus, affected wolf populations usually demonstrate good recruitment (Brand *et al.* 1995, pp. 420–421). Mortality from CD has only been confirmed once in NRM wolves despite their high exposure to it, but we suspect it contributed to the high pup mortality documented in the northern GYA in spring 1999, 2005, and 2008. These periodic outbreaks will undoubtedly occur but as documented elsewhere CD does not threaten wolf populations and the NRM wolf population increased even during years with localized outbreaks. Park biologist's (Smith 2008, pers. comm.) believes that wolf deaths mainly occurred from CD when the YNP population was around the historic high of 170 wolves the previous winter. In 2008, wolf packs in Wyoming outside YNP (about 25 packs and 18 breeding pairs) appear to have only slightly lower pup production (Jimenez 2008, pers. comm.), indicating the probable most severe disease outbreak in 2008 was localized to the northern range of YNP. This suggests CD mortality maybe associate with high wolf density, and possibly carrying capacity. Thus the NRM population may be more effected by CD, and other diseases when at the carrying capacity in suitable habitat.

Lyme disease, caused by a spirochete bacterium, is spread primarily by deer ticks (*Ixodes dammini*). Host species include humans, horses (*Equus caballus*), dogs, white-tailed deer, mule deer, elk, white-footed mice (*Peromyscus leucopus*), eastern chipmunks (*Tamias striatus*), coyotes, and wolves. In WGL populations, it does not appear to cause adult mortality, but might be suppressing population growth by decreasing wolf pup survival (Wisconsin Department of Natural Resources 1999, p. 61. Lyme disease has not been reported from wolves beyond the Great Lakes regions (Wisconsin Department of Natural Resources 1999, p. 61).

Mange (*Sarcoptes scabeii*) is caused by a mite 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, pp. 207–208). Advanced mange can involve the entire body and can cause emaciation, decreased flight distance, staggering, and death (Kreeger 2003, p. 207). 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, pp. 427–428). Mange has been shown to temporarily affect wolf population growth rates and perhaps wolf distribution (Kreeger 2003, p. 208).

Mange has been detected in, and caused mortality to, wolves in the NRM almost exclusively in the GYA, and primarily east of the Continental Divide (Jimenez *et al.* 2008b; Atkinson 2006, p. 5; Smith and Almberg 2007, p. 19). Those wolves likely contracted mange from coyotes or fox whose populations experience occasional outbreaks. Between 2003 and 2008, the percent of Montana packs with mange fluctuated between 3 and 24 percent of packs including infestation rates of 3%, 10%, 24%, 10%, 4%, and 0%, respectively. Between 2002 and 2008, the percent of Wyoming packs with mange fluctuated between 3 and 15 percent of packs including infestation rates of 5%, 8%, 12%, 3%, 9%, 15%, and 15%, respectively. In these cases, mange did not appear to infest every member of the pack. For example, in 2008, manage was detected in 8 wolves from 4 different packs in YNP, one pack in Wyoming outside YNP, and a couple of packs in previously infested areas of southwestern Montana. Manage has never been confirmed in wolves in Idaho (Jimenez *et al.* 2008b, p. 1).

In packs with the most severe infestations, pup survival appeared low, and some adults died (Jimenez *et al.* 2008b). In addition, we euthanized several wolves with severe mange for humane reasons and because of their abnormal behavior. We predict that mange in the NRM will act as it has in other parts of North America (Brand *et al.* 1995, pp. 427–428; Kreeger 2003, pp. 207–208) 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 wolves that naturally overcame a mange infestation (Jimenez *et al.* 2008b, p. 1).

Dog-biting lice (*Trichodectes canis*) commonly feed on domestic dogs, but can infest coyotes and wolves (Schwartz *et al.* 1983, p. 372; Mech *et al.* 1985, p. 404). 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 inflammation and itching, appears possible. Dog-biting lice were first confirmed in NRM wolves on two members of the Battlefield pack in the Big Hole Valley of southwestern Montana in 2005, and on a wolf in south-central Idaho in early 2006, but their infestations were not severe (Service *et al.* 2006, p. 15; Atkinson 2006, p. 5; Jimenez *et al.* 2008c). The source of this infestation is unknown, but was likely domestic dogs. Lice have not been documented in the NRM since 2006.

Rabies, canine heartworm (*Dirofilaria immitus*), blastomycosis, brucellosis, neosporsis, leptospirosis, bovine tuberculosis, canine coronavirus, viral papillomatosis, hookworm, tapeworm (Echinococcus granulosus, Foreyt *et al.* 2008, p. 1), lice, coccidiosis, and canine adenovirus/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, pp. 419–429; Johnson 1995a, b, pp. 5–73, 1995b, pp. 5–49; Mech and Kurtz 1999, p. 305; Wisconsin Department of Natural Resources 1999, p. 61; Kreeger 2003, pp. 202–214; Atkinson 2006, p. 1–7). Canid rabies caused local population declines in Alaska (Ballard and Krausman 1997, p. 242) and may temporarily limit population growth or distribution where another species, such as arctic foxes (*Alopex lagopus*), act as a reservoir for the disease. We have not detected rabies in wolves in the NRM. Range expansion could provide new avenues for exposure to several of these diseases, especially canine heartworm, rabies, bovine tuberculosis, and possibly new diseases such as chronic wasting disease and West Nile virus, further emphasizing the need for vigilant disease monitoring programs.

Because 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 are already high and may be peaking (Service *et al.* 2009, Table 1 & Figure 1), wolf-to-wolf contacts will not likely lead to a continuing increase in disease prevalence. The wolves' exposure to these types of organisms may be most common outside of the core population areas, where domestic dogs are most common, and lowest in the core population areas because wolves tend to flow out of, not into, saturated habitats. Despite this dynamic, we assume that most NRM wolves will continue to have exposure to most diseases and parasites in the system. Diseases or parasites have not been a significant threat to wolf population recovery in the NRM or elsewhere to date, and we have no reason to believe that they will become a significant threat to their viability in the foreseeable future.

In terms of future monitoring, States have committed to monitor the NRM wolf population for significant disease and parasite problems. State wildlife health programs often cooperate with Federal agencies and universities and usually have both reactive and proactive wildlife health monitoring protocols. Reactive strategies consist of 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. We do not believe that diseases or changes in disease monitoring will threaten wolf population recovery in the NRM DPS.

Natural Predation—No wild animals routinely prey on gray wolves (Ballard *et al.* 2003, pp. 259–260). Occasionally wolves have been killed by large prey such as elk, deer, bison, and moose (Mech and Nelson 1989, p. 207; Smith *et al.* 2006, p. 247; Mech and Peterson 2003, p. 134), but those instances are few. Since the 1980s, wolves in the NRM have died from wounds they received while attacking prey on about a dozen occasions (Smith *et al.* 2006, p. 247). That level of natural mortality could not significantly affect wolf population viability or stability.

Since NRM wolves have been monitored, only three wolves have been confirmed killed by other large predators. Two adults were killed by mountain lions, and one pup was killed by a grizzly bear (Jimenez *et al.* 2008a, p. 1). Wolves in the NRM inhabit the same areas as mountain lions, grizzly bears, and black bears, but conflicts rarely result in the death of either species. Wolves evolved with other large predators, and no other large predators in North America, except humans, have the potential to significantly impact wolf populations.

Other wolves are the largest cause of natural predation among wolves. Numerous mortalities have resulted from territorial conflicts between wolves and about 7 percent of wolf deaths are

caused by territorial conflict in the NRM wolf population (Smith 2007, p. 1). 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 densities; consequently, territorial conflict is highest in saturated habitats like YNP. This cause of mortality is infrequent except at carry-capacity and does not result in a level of mortality (<3 percent rate of natural wolf mortality in the NRM) that would significantly affect a wolf population's viability in the NRM (Smith *et al.* 2008, p. 1).

Human-caused Predation—Wolves are susceptible to human-caused mortality, especially in open habitats such as those that occur in the western United States (Bangs *et al.* 2004, p. 93). An active eradication program is the sole reason that wolves were extirpated from the NRM (Weaver 1978, p. i). Humans kill wolves for a number of reasons. In all locations where people, livestock, and wolves coexist, some wolves are killed to resolve conflicts with livestock (Fritts *et al.* 2003, p. 310; Woodroffe *et al.* 2005, pp. 86–107, 345–7). 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) (Bangs *et al.* 2005, p. 346) and some are reported to State, Tribal, and Federal authorities. A few (2 in 2008) wolves have been killed by people who stated that they believed their physical safety was being threatened.

However, many wolf killings are intentional, illegal, and are never reported to authorities. Wolves may become unwary of people or human activity, and that can make them vulnerable to human-caused mortality (Mech and Boitani 2003, pp. 300–302). In the NRM, mountain topography concentrates both wolf and human activity in valley bottoms (Boyd and Pletscher 1999, p. 1105), 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 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 both illegal killing and agency control, has not prevented population recovery, it has affected NRM wolf distribution (Bangs *et al.* 2004, p. 93) preventing successfully pack establishment and persistence in open prairie or high desert habitats (Bangs *et al.* 1998, p. 788; Service *et al.* 1989–2009, Figure 1).

As part of the interagency wolf monitoring program and various research projects, about 30 percent of the NRM wolf population has been monitored with radio telemetry since the 1980s (Smith *et al.* 2008, p. 1). The annual survival rate of mature wolves in northwestern Montana and adjacent Canada from 1984 through 1995 was 80 percent (Pletscher *et al.* 1997, p. 459) including 84 percent for resident wolves and 66 percent for dispersers. A preliminary analysis of the survival data among NRM radio-collared wolves (Hensey and Fuller 1983, p. 1; Smith *et al.* 2008, p. 1) from 1984 through 2006 indicates that about 26 percent of adult-sized wolves die every year, so annual adult survival averages about 74 percent, which typically allows wolf population growth (Keith 1983, p. 66; Fuller *et al.* 2003, p. 182). Wolves in the largest blocks of remote habitat without livestock, such as central Idaho or YNP, had annual survival rates around 80 percent (Smith *et al.*, 2006 p. 245; Smith *et al.* 2008). Wolves outside of large remote areas had survival rates as low as 54 percent in some years (Smith *et al.* 2006, p. 245; Smith *et al.* 2008, p. 1). This percentage is among the lower end of adult wolf survival rates that an isolated population can sustain (Fuller *et al.* 2003, p. 185).

Of all mortalities of radio-collared wolves from 1984–2004, 21 percent were killed by natural causes (including 7 percent wolf-to-wolf conflict), 15 percent died from human-caused mortality other than agency control (vehicles, capture-related, incidental trapping, accidents, and legal harvest of wolves that range into Canada), 28 percent were killed in control actions, 21 percent were illegally killed, and in 15 percent cause of death was unknown (Smith 2007, p. 1). Nevertheless, wolf numbers have increased at rate of about 22 percent annually, until 2008, in the face of ongoing levels of human-caused mortality.

It should be noted that our analysis did not estimate the cause or rate of survival among pups younger than 7 months of age because they are too small to radio-collar. These survival rates may also be biased in other ways. Wolves are more likely to be radio-collared if they likely to come into conflict with people, so the proportion of mortality caused by agency depredation control actions could be overestimated by radio-telemetry data. Wolves initially radio-collared because of livestock depredation had higher rates of mortality (Murray *et al.* 2008, p. 1). People who illegally kill wolves may destroy the radio-collar, so the proportion of illegal mortality could be underestimated. Wolves that disperse long distances are much more difficult to locate than resident wolves, so their survival maybe even lower than telemetry data indicate (Murray *et al.* 2008, p. 1). The high proportion of wolves radio-collared in National Parks for research purposes can result in underestimating the overall rate of human-caused mortality in the NRM wolf population.

Wolf mortality from agency control of problem wolves (which includes legal take by private individuals under defense of property regulations in rules promulgated under section 10(j) of the Act) is estimated to remove around 10 percent of adult radio-collared wolves annually. If the Act's protections were removed, we expect comparable levels of agency control. In terms of defense of property, from 1995 through 2008, about 75 wolves were legally killed by private citizens under Federal defense of property regulations (Service 1994, pp. 2:13–14; 59 FR 60252, November 22, 1994; 59 FR 60266, November 22, 1994; 70 FR 1286, January 6, 2005; 73 FR 4720, January 28, 2008; 50 CFR 17.84(i) & (n)). Existing 10(j) regulations are similar to State laws that would take effect and direct take of problem wolves if wolves were delisted, except in Wyoming. Thus, we do not expect private citizen take under State defense of property laws to significantly increase the overall rate of wolf removal, except in Wyoming (Bangs *et al.* in press, pp. 19–20). All sources of human-caused mortality would be considered in total allowable mortality levels. In Wyoming, State law mandates much more aggressive control in the Trophy game area and unregulated take in the predatory animal area and would far exceed take allowed under existing 10(j) regulations. Given adequate regulatory mechanisms in all portions of the NRM DPS, except Wyoming, we believe this issue will not threaten the recovered status of the NRM DPS, except in Wyoming. These issues are discussed in more detail relative to State regulation in Factor D below.

In our previous final rule we explained that, post-delisting, State management would likely increase the mortality rate outside National Parks and National Wildlife Refuges from its current level (Smith *et al.* 2008, p. 1). We explained that wolf mortality could nearly double without reducing the population (Fuller *et al.* 2003, p. 185). In 2008, the high number of wolves in the NRMs, saturation of suitable habitat, and increased dispersal into unsuitable habitat, in combination with more

aggressive State management frameworks, resulted in about a forty percent increase (78 wolves) in agency authorized control actions from the previous year. As more wolves tried to establish themselves in unsuitable habitat livestock depredations increased and more wolves and a larger percentage of the wolf population were killed by agency control actions. However, this increase alone could not have resulted in the slower growth in the NRM wolf population. Increased agency control only explains between thirty-three percent of the difference between a predicted NRM wolf population of 1,876 wolves for 2008 (assuming continued population growth of 24 percent as documented prior to 2008) and our actual mid-year 2008 estimate of 1,639 wolves, a difference of 237 wolves. We also think it's unlikely other sources of human-caused mortality made up the difference between these two estimates. Instead, we believe the NRM's slowing growth was primarily the result of reaching carry capacity where a host of natural causes (disease, social strife, starvation, etc.) have acted to help control the population.

In summary, recent and predicted human-caused mortality rates will allow for rapid wolf population growth when the wolf population is below carrying capacity. The protection of wolves under the Act promoted rapid initial wolf population growth in suitable habitat. Montana, Idaho, and Wyoming have committed to continue to regulate human-caused mortality so that it does not reduce the NRM wolf population below recovery levels. But only Montana, Idaho, Oregon, Washington, and Utah have adequate laws and regulations to fulfill those commitments and ensure that the NRM wolf population remains above recovery levels (see Factor D). Each post-delisting management entity (State, Tribal, and Federal) has experienced and professional wildlife staff to ensure those commitments can be accomplished.

D. The Adequacy or Inadequacy of Existing Regulatory Mechanisms

The following analysis summarizes the current regulatory approach as well as the regulatory mechanisms that would take effect post-delisting. The analysis considers whether such post-delisting regulatory mechanisms in each portion of the NRM DPS are adequate to maintain the recovered status of the NRM DPS.

Current Wolf Management—The 1980 and 1987 NRM wolf recovery plans (Service 1980, p. 4; Service 1987, p. 3) 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 some wolves would not prevent the wolf population from achieving recovery. In 1988, the Service developed an interim wolf control plan that applied to Montana and Wyoming (Service 1988, p. 1); the plan was amended in 1990 to include Idaho and eastern Washington (Service 1990, p. 1). We analyzed the effectiveness of those plans in 1999, and revised our guidelines for management of problem wolves listed as endangered (Service 1999, p. 1). Evidence showed that most wolves do not attack livestock, especially larger livestock such as adult horses and cattle, but wolf presence around livestock will always result in some level of depredation (Bangs and Shivik 2001; Bangs *et al.* 2005, pp. 348–350). Therefore, we developed a set of guidelines under which depredating wolves could be harassed, moved, or killed by agency officials (Service 1999, pp. 39–40). 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, pp. 276–276). Our assumptions have proven correct, as wolf depredation on livestock and subsequent agency control actions have remained compatible with recovery, as the wolf population expanded its distribution and numbers far beyond, and more quickly than, earlier predictions (Service 1994, p. 2:12; Service *et al.* 2007, Tables 4).

The conflict between wolves and livestock has resulted in the average annual removal of 8 to 14 percent of the wolf population (Bangs *et al.* 1995, p. 130; Bangs *et al.* 2004, p. 92; Bangs *et al.* 2005, pp. 342–344; Service *et al.* 2008, Tables 4, 5; Smith *et al.* 2008, p. 1). We estimate illegal killing removed another 10 percent of the wolf population, and accidental and unintentional human-caused deaths have removed 3 percent of the population annually (Smith *et al.* 2008, p. 1). Even with this level of mortality, populations have expanded rapidly (Service *et al.* 2008, Table 5). Despite liberal regulations regarding wolf removal, nearly all suitable areas for wolves are being occupied by resident packs (Service *et al.* 2008, Figure 1; Oakleaf *et al.* 2005, p. 559). The outer NRM wolf pack distribution has remained largely unchanged since the end of 2000 (Service *et al.* 2001–2009, Figure 1), indicating that wolf packs are simply filling in the areas with suitable habitat, not successfully expanding their range into unsuitable habitat. As we previously explained in the recovery section, we believe that the NRM wolf population is likely at or above long-term carrying capacity.

Because wolf populations continually try to expand, we expect wolves will increasingly disperse into unsuitable areas that are intensively used for livestock production. A higher percentage of wolves in those areas will become involved in conflicts with livestock, and a higher percentage of those wolves will be removed to reduce future livestock damage. In the earlier stages of wolf restoration about 6 percent of the NRM wolf population was removed annually (Service *et al.* 2008, Table 5). In recent years, this total has more than doubled (Service *et al.* 2007–2009, Table 5). Fuller *et al.* (2003) reviewed all available wolf studies to determine whether a population increased, stabilized, or decreased based on its annual mortality rates. According to these field data, assuming the population is maintained below carrying capacity, human-caused mortality would have to remove somewhere between 34 percent and 50 percent of the wolf population annually before the population would decline (Fuller *et al.* 2003, pp. 184–185). In practice, until 2008, the wolf population grew an average rate of 24 percent annually despite an annual mortality rate of 26 percent (ranging from 20 to 50 percent depending on location and year) (Smith *et al.* 2008, p. 1). Actual capacity to withstand mortality will vary by geographic area. The State laws and management plans intend to balance the level of wolf mortality, primarily human-caused mortality, with the wolf population growth rate to achieve desired population objectives.

Adequacy of Regulatory Mechanisms Within the NRM DPS—It has been long recognized that the future conservation of a delisted wolf population in the NRM depends almost solely on State regulation of human-caused mortality. In 1999, the Governors of Montana, Idaho, and Wyoming agreed that regional coordination in wolf management planning among the State, Tribes, and other jurisdictions was necessary. They signed a MOU to facilitate cooperation among the three States in developing adequate State wolf management plans so that delisting could proceed. In this agreement, all

three States committed to maintain at least 10 breeding pairs and 100 wolves per State. The States were to develop their pack definitions to approximate the current breeding pair definition. Governors from the three States renewed that agreement in April 2002.

Because the primary threat to the wolf population (human caused mortality) still has the potential to significantly impact wolf populations if not adequately managed, we must find that the States will manage for sustainable mortality levels before we can remove the Act's protections. Therefore, we requested that the States of Montana, Idaho, and Wyoming prepare State wolf management plans to demonstrate how they would manage wolves after the protections of the Act were removed. With limited suitable habitat in Washington, Oregon, and Utah and on Tribal lands within the NRM DPS, we believe these areas will play only a small role in the conservation of the NRM DPS. We do not believe threats in those States or on Tribal lands are likely to be significant enough to affect wolf population recovery. Nevertheless, all areas within the NRM DPS are considered below.

Several issues were key to our approval of State plans including: Consistency between State laws, management plans, and regulations; regulations that prevent excessive take; methods used to measure wolf population status; the organizational ability and skill to successfully monitor and manage State wolf populations; and commitments to manage wolves safely above minimum recovery levels. Our determination of the adequacy of those three key State management plans was based on the combination of Service knowledge of State law, the State management plans, wolf biology, our experience managing wolves for the last 20 years, the success of wolf management in other areas of the world peer review of the State plans, the State response to peer review, and public comments including those from the States.

State plans and other documents pertinent to State wolf management post-delisting can be viewed at *http://westerngraywolf.fws.gov/*. All current State and Tribal management laws, plans, and regulations in the NRM DPS have been evaluated and are discussed below.

Montana—Montana has demonstrated their capacity to manage their wolf population. In June 2005, MFWP entered into a Cooperative Agreement with the Service allowing it manage all wolves in the State subject to general oversight by the Service. The State's efforts have proven successful, as Montana's wolf population estimate increased from 152 wolves in 15 breeding pairs in late 2004 to about 491 wolves in 34 breeding pairs in 2008 (Service *et al.* 2009, Table 4). Preliminary data also indicated that Montana's wolf population in 2008 would be at higher levels than in 2007 (McDonald 2008). Their post-delisting approach is discussed in detail below.

The gray wolf was listed under the Montana Nongame and Endangered Species Conservation Act of 1973 (87–5–101 MCA). Senate Bill 163, passed by the Montana Legislature and signed into law by the Governor in 2001 and Administrative Rules of Montana 12.2.501 and 12.5.201 establish the current legal status for wolves in Montana. Upon Federal delisting, wolves would be classified and protected under Montana law as a ''Species in Need of Management'' (MCA 87–5–101 to 87–5–123). Montana law defines ''species in need of management'' as ''The collection and application of biological information for the purposes of increasing the number of individuals within species and populations of wildlife up to the optimum carrying capacity of their habitat and maintain those levels. The term includes the entire range of activities that constitute a modern scientific resource program, including, but not limited to research, census, law enforcement, habitat improvement, and education. The term also includes the periodic or total protection of species or populations as well as regulated taking.''

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 (including regulated public harvest) beyond the immediate defense of life/property situations. Some illegal human-caused mortality would still occur, but is to be prosecuted under State law and Commission regulations.

In 2000, 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 pursuant to the Montana Environmental Policy Act and recommended that the Updated Advisory Council alternative be selected as Montana's Final Gray Wolf Conservation and Management Plan (Montana 2003, p. 131). See *http://fwp.mt.gov/wildthings/wolf/default.html* to view the MFWP Final EIS and the Montana Gray Wolf Conservation and Management Plan.

Under the management plan, the wolf population would be maintained above the recovery level of 10 breeding pairs by managing for a total of at least 15 breeding pairs. Wolves would not be deliberately confined to any specific geographic areas of Montana nor would the population size be deliberately capped at a specific level. However, wolf numbers and distribution would be managed adaptively based on ecological factors, wolf population status, conflict mitigation, and human social tolerance.

The plan and Administrative Rules commit MFWP to implement its management framework in a manner that encourages connectivity among wolf populations in Canada, Idaho, GYA, and Montana to maintain the overall metapopulation structure (see Factor E.). Overall, wolf management would include population monitoring, routine analysis of population health, management in concert with prey populations, law enforcement, control of domestic animal/human conflicts, implementation of a wolf-damage mitigation and reimbursement program, research, and information and public outreach. Montana's plan (Montana 2003, p. 132) predicted that under State management, the wolf population would be between 328 and 657 wolves with approximately 27 to 54 breeding pairs by 2015.

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

MFWP will manage problem wolves in a manner similar to the control program currently being implemented in the experimental population area in

southern Montana. Similar to the current federal regulations in the experimental areas, Montana law (MCA 87–3–130) will allow a citizen to haze, harass, or kill a wolf that is seen attacking, killing, or threatening to kill a person or livestock or domestic dogs. Administrative Rules of Montana (12.9.1301 through 12.9.1305) will guide MFWP's approach to addressing wolf-livestock conflicts, including non-lethal and lethal control. Agency control of problem wolves is incremental and in response to confirmed depredations. State management of conflicts would become more conservative and no public hunting would be allowed if there were fewer than 15 breeding pairs statewide.

State laws, Administrative Rules and Commission-approved regulations would allow agency management of problem wolves by MFWP and USDA–Wildlife Services (WS); take by private citizens in defense of private property; and, when the population is above 15 breeding pairs, regulated fair chase hunting of wolves. Montana law allowing take in defense of private property is similar to the 2005 experimental population regulations, whereby livestock owners can shoot wolves seen attacking or threatening livestock or domestic dogs as long as such incidents are reported promptly and subsequent investigations confirm that livestock were being attacked by wolves. Since 2004, MFWP has enlisted and directed USDA–WS in problem wolf management, just as the Service has done since 1987.

For the 2008 hunting season, MFWP recommended a tentative state-wide total harvest quota of 75 wolves, split across three wolf management units. The Commission's decision to adopt final quotas was pre-empted by issuance of the preliminary injunction. Thus, the Commission did not adopt final quotas. If it would have approved MFWP's recommendation and implemented, a MFWP simulation model predicted that one year later, there would be about 497 wolves, between 93 and 100 packs, and between 44 and 61 breeding pairs in Montana; this would have been larger than the minimum 2007 population.

This model simulation now appears to have been reasonable because without hunting, the wolf population increased by 69 wolves in 2008. Montana's wolf season-setting processes (framework and quotas) also incorporate adequate safety nets to prevent overharvest. These include: (1) Establishing quotas at a time of year (tentative in July and final in August) so that the most current monitoring data could be considered; (2) creation of a 1–800 hotline update so that hunters would know whether or not wolf harvest was legal (i.e. quota was open) prior to going hunting; (3) mandatory reporting of successful harvest within 12 hours so FWP can closely monitor hunter success and quota status; (4) mandatory carcass inspection within 10 days to verify age/sex of harvested animals and collect other biological information; (5) closure of the season upon a 24-hour notice when a wildlife management unit the quota is filled; (6) FWP authority to initiate a season closure prior to reaching a quota when conditions or circumstances indicate the quota may be reached within 24 hours; (7) definite season-ending closure date, regardless of whether the quotas were reached; and (8) emergency season closure at any time by order of the FWP Commission. If the full tentative state-wide harvest recommended MFWP had occurred in 2008, it would have resulted in an estimated statewide wolf population of 416 wolves in 35 to 40 breeding pairs. Should overharvest ever occur, next years harvest would be adjusted to compensate. No public hunting would be allowed if there were fewer than 15 breeding pairs statewide.

The MFWP Commission also prohibited more than 25% of the total allowable wolf management unit quota to be taken during the month of December. This would have limited wolf harvest when wolves are known to disperse at higher rates.

Hunt and defense of property laws, regulations, and other background information can be viewed at: *http://westerngraywolf.fws.gov* and in Montana's (2008) comments on the delisting proposal.

When the Service reviewed and determined that the Montana wolf plan and regulatory framework met the requirements of the Act, 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. We have also carefully reviewed Montana's 2008 comments on this rule (McDonald 2008). In their comments Montana explained in detail how their regulatory framework guarantee's the secure future of wolves in Montana, the process used to develop Montana's hunting framework and quota system and its safeguards, and its commitment and the steps Montana had already taken to ensuring demographic and genetic connectivity with Canada and the other recovery areas. The Service has every confidence that Montana will implement, for the foreseeable future, the commitments it has made in its current laws, regulations, and wolf plan. Thus, we continue to determine that Montana's State law, wolf management plan, and implementing regulations provide the necessary regulatory mechanisms to assure maintenance of the State numerical and distributional share of a recovered NRM wolf population well into the foreseeable future.

Idaho—Idaho has demonstrated their capacity to manage their wolf population. In January 2006, the Governor of Idaho signed a Memorandum of Understanding with the Secretary of the Interior that provided IDFG the responsibility and authority to manage all Idaho wolves as a designated agent of the Service. The State's efforts have proven successful, as Idaho's wolf population estimate increased from 512 wolves in 36 breeding pairs in late 2005 (Service *et al.* 2006, Table 4) to about 846 wolves in 39 breeding pairs in 2008 (Service *et al.* 2009). Slower growth and higher levels of conflicts in 2008 indicates suitable habitat maybe saturated and the wolf population will stabilize because it is at carrying capacity. Their post-delisting approach is discussed in detail below.

The Idaho Fish and Game Commission (IFGC) has authority to classify wildlife under Idaho Code 36–104(b) and 36–201. The gray wolf was classified as endangered by the State until March 2005, when the IFGC reclassified the species as a big game animal under Idaho Administrative Procedures Act (13.01.06.100.01.d). The big game classification will take effect once this rule becomes effective. As a big game animal, State regulations will adjust human-caused wolf mortality to ensure recovery levels are exceeded. Title 36 of the Idaho statutes has penalties associated with illegal take of big game animals. These rules are consistent with the legislatively adopted Idaho Wolf Conservation and Management Plan (IWCMP) (Idaho 2002) and big game hunting regulations currently in place. The IWCMP states that wolves will be protected against illegal take as a big game animal under Idaho Code 36–1402, 36–1404, and 36–202(h).

The IWCMP was written with the assistance and leadership of the Wolf Oversight Committee established in 1992 by the Idaho Legislature. Many special interest groups including legislators, sportsmen, livestock producers, conservationists, and IDFG personnel were involved in the development of the IWCMP. The Service provided technical advice to the Committee and reviewed numerous drafts before the IWCMP was finalized.

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

The IWCMP calls for IDFG: To be the primary manager of wolves after delisting; 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 Act. Wolf take will be more liberal if there are more than 15 packs and more conservative if there are fewer than 15 packs in Idaho. The wolf population will be managed by defense of property regulations similar to those now in effect under the Act. 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, guides, and others hunt. The IWCMP allows IDFG to classify the wolf as a big game animal or furbearer, or to assign a special classification of predator, so that human-caused mortality can be regulated. In March 2005, the IGFC adopted the classification of wolves as a big game animal post-delisting, with the intent of managing wolves similar to black bears and mountain lions, including regulated public harvest when populations are above 15 packs. The IWCMP calls for the State to coordinate with USDA–WS to manage depredating wolves depending on the number of wolves in the State. It also calls for a balanced educational effort.

In November 2007, Idaho released its Wolf Population Management Plan for public review and comment (Otter 2007, p. 1; Idaho 2007). That plan is a more detailed step-down management plan compared to the general guidance given in the plan Idaho adopted in 2002 and discusses the State's intent to manage the population above 20 breeding pairs to provide hunting opportunities for wolves surplus to that goal (Idaho 2007). The population goal within the plan calls for maintaining the population near or above the 2005 levels (approximately 520 wolves). The 2007 plan details how wolf populations will be managed to assure their niche in Idaho's wild places into the future (Otter 2007). It was finalized and adopted by the IFGC in March 2008.

Maintenance of prey populations is an important part of continued wolf recovery. The IDFG will manage elk and deer populations to meet biological and social objectives 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 focus on maintaining sufficient prey populations to sustain quality hunting and healthy, viable wolf and other carnivore populations. IDFG has conducted research to better understand the impacts of wolves and their relationships to ungulate population sizes and distribution so that regulated take of wolves can be used to assist in management of ungulate populations and vice versa.

The Mule Deer Initiative in southeast Idaho was implemented by IDFG in 2005, to restore and improve mule deer populations. Though most of the initiative lies outside current wolf range and suitable wolf habitat in Idaho, improving ungulate populations and hunter success will decrease negative attitudes toward wolves. When mule deer increase, some wolves may move into the areas that are being highlighted under the initiative. Habitat improvements within much of southeast Idaho would focus on improving mule deer conditions. The Clearwater Elk Initiative also is an attempt to improve elk numbers in the area of the Clearwater Region in north Idaho where currently IDFG has concerns about the health of that once-abundant elk herd (Idaho 2006). This is the same area where low elk numbers resulted in a proposal to temporarily reduce wolf density for 5 years in an attempt to increase elk numbers. Ultimately more prey always allows areas the potential to support more predators, including wolves.

Once wolves are delisted, human-caused mortality will be regulated as directed by the IWCMP to maintain a recovered wolf population. In its preliminary injunction order, the District Court stated that Idaho's depredation control law was not likely to threaten the continued existence of the wolf in Idaho because that State has committed to managing for at least 15 breeding pairs and at least 150 wolves. We agree with this conclusion. The Idaho management plan is designed to maintain the Idaho wolf population at over 500 wolves in midwinter. At this level, it would be impossible for the Idaho's defense of property regulations to significantly affect the overall rate of wolf mortality in Idaho (Smith *et al.* 2008, p. 1; Service *et al.* 2009, Table 5). Furthermore, every mortality, including defense of property mortality which usually occurs in summer, will be deducted from the fall hunting quota. Therefore, all wolves taken in defense of property in Idaho would simply reduce the amount that could otherwise be taken by hunters in the fall. Idaho provided a more detailed analysis of their regulatory framework in their comments (Otter 2008) to our 2008 notice (73 FR 63926, October 28, 2008) reopening the comment period on our February 8, 2007 proposed rule (72 FR 6106).

The court specifically noted that Idaho's final wolf hunting regulations set a quota for the 2008 hunting season of 428 wolves from all causes of mortality Statewide. We anticipate that most mortality from hunters would occur in the fall elk and deer season in October and November when access is greatest and more hunters are afield. Mortality limits were set by zone so that once reached, the hunting season for that zone would be closed. As implemented, Idaho included all take in defense of property in the total allowable mortality levels. Mandatory reporting of harvest or defense of property take is required within 72 hours. The court's July 18, 2008, order preliminarily enjoining the delisting rule prevented implementation of the 2008 hunting season. Had the hunting season occurred, the maximum level of wolf mortality would have been a maximum (and likely unreachable) harvest of about 244 wolves. If that one-year quota had been fully achieved it would have still likely resulted in a remaining wolf population in Idaho of at least 602 wolves by mid-winter 2008 (Otter 2008). In subsequent years, Idaho intended to greatly reduce the harvest to about 54 wolves per year to maintain the wolf population at or above 518 wolves statewide. Any changes in actual harvest or actual wolf population levels from theoretical predictions would be adjusted (adaptive management) in subsequent years. Wolf populations are so biologically resilient, Idaho habitat so productive and expansive, and Idaho is managing for such a large buffer above minimum population levels, that such typical year-to-year fluctuations between theory and reality would never reduce the wolf population below State, let alone recovery minimum levels.

Hunt and defense of property laws, regulations, and other background information can be viewed at: *http://westerngraywolf.fws.gov* and are discussed in detail in Idaho's (Otter 2008) comments on the proposal for this delisting rule.

Our analysis of Idaho's regulatory framework determined that the combined impact of the State law, their wolf management plans and IFGC actions and implementing regulations constitute a biologically-based and scientifically sound wolf conservation strategy. It will maintain the wolf

population well above recovery minimums and the methods that they will utilize to established the hunting quota system and harvest season it will promote natural connectivity from Idaho into the GYA (Otter 2008). The Service has every confidence that Idaho will implement, for the foreseeable future, the commitments it has made in its current laws, regulations, and wolf plan. Thus, we continue to determine that Idaho's State law, wolf management plan, and implementing regulations provide the necessary regulatory mechanisms to assure maintenance of the State numerical and distributional share of a recovered NRM wolf population well into the foreseeable future.

Wyoming—In 2007, the Wyoming legislature passed a State statute which provided the framework for Wyoming's wolf management once the wolf is delisted from the Act. Following the change in State law, Wyoming drafted a revised wolf management plan (Wyoming 2007). On November 16, 2007, the WGFC unanimously approved the 2007 Wyoming Plan (Cleveland 2007, p. 1). On December 12, 2007, the Service determined that this plan, if implemented, would provide adequate regulatory protections to conserve Wyoming's portion of the recovered NRM wolf population into the foreseeable future (Hall 2007, p. 1–3). The plan went into effect upon the Governor's certification to the Wyoming Secretary of State that all of the provisions found in the 2007 Wyoming wolf management law have been met (W.S. §§ 23–1–109(b)&(c); Freudenthal 2007a, p. 1–3).

Implementation of that law was premised on Wyoming's Governor certifying to the Wyoming Secretary of State that (1) the Service publishing a delisting rule that includes the entire State of Wyoming by February 28, 2007; (2) the Service completed a modification of the 2005 special rule (10j) for the experimental population that addressed Wyoming's concerns about wolf management to maintain ungulate herds above State management objectives; and (3) settlement of the claims in Wyoming's lawsuit contesting the Service not approving Wyoming's 2003 wolf management law and wolf plan. Wyoming provided the necessary certifications before the effective date and the Service-approved 2007 Wyoming wolf management plan was legally authorized by Wyoming statutes. It was implemented on March 28, 2008, when the previous delisting rule became effective (73 FR 10514, February 27, 2008).

During the subsequent litigation, the U.S. District Court for the District of Montana reviewed our approval of Wyoming's regulatory framework. The court stated that we acted arbitrarily in delisting a wolf population that lacked evidence of genetic exchange between subpopulations. The court also stated that we acted arbitrarily and capriciously when we approved Wyoming's 2007 regulatory framework. The court was particularly concerned that Wyoming failed to commit to managing for at least 15 breeding pairs. The court also stated that accepting a ''small'' trophy game area designation (approximately 12 percent of northwest Wyoming) was not supported by the record and was therefore arbitrary and capricious. Even more problematic, in the courts view, was the ''malleable'' nature of the trophy game area which could be diminished by the WGFC post-delisting. Finally, the court raised concerns with Wyoming's depredation control law which it viewed as significantly more expansive than existing experimental population regulations. The court concluded that the Plaintiffs were likely to prevail on the merits of their claims.

Based on the concerns expressed by the district court, we reanalyzed Wyoming's regulatory framework. A central component of Wyoming's regulatory framework is its plan to designate wolves as predatory animals across at least 88 percent of the State and manage wolves as a trophy game animal in the remaining portions of northwest Wyoming. The trophy game area totaled just over 31,000 km^2 (12,000 mi^2) (12% of Wyoming) in northwestern Wyoming, including YNP, Grand Teton National Park, John D. Rockefeller Memorial Parkway, adjacent U.S. Forest Service-designated Wilderness Areas, and adjacent public and private lands.

In the predatory area, wolves will experience unregulated human-caused mortality. Wolves are unlike coyotes in that wolf behavior and reproductive biology results in wolves being extirpated in the face of extensive human-caused mortality. As we have previously concluded (71 FR 43410, August 1, 2006; 72 FR 6106, February 8, 2007; 73 FR 10514, February 27, 2008), wolves are unlikely to survive in portions of Wyoming where they are regulated as predatory animals. This conclusion was validated this spring. After our previous delisting became effective, most of the wolves in the predatory animal area were killed within a few weeks of losing the Act's protection (17 of at least 28). Mortality included: 9 shot from the ground by private individuals, sometimes after being chased long distances by snowmobile; 2 shot by private aerial gunners permitted by the Wyoming Department of Agriculture; 5 killed by agency authorized control, and 1 died of unknown causes.

''Trophy game'' status allows the WGFC and WGFD to regulate methods of take, hunting seasons, types of allowed take, and numbers of wolves that could be killed. All other States within the NRM DPS manage wolves as a game species.

We previously approved this approach because the 12 percent of Wyoming where wolves would be managed as a trophy game species included 70 percent of the State's suitable wolf habitat and was presumed large enough to support Wyoming's share of a recovered wolf population. This approach failed to consider the impacts of the predatory animal area to genetic connectivity. As discussed fully in Factor E and the Conclusion of the 5-Factor Analysis sections below, we now believe Wyoming must institute additional protections to facilitate natural genetic exchange in order to constitute an adequate regulatory mechanism. Specifically, long distance dispersers from other recovery areas, especially from Idaho, are most likely to cross the predatory animal area to find and join other packs (facilitating genetic connectivity) east or south of YNP. This approach also had failed to consider the likelihood that some lone wolves or even breeding pairs or packs from the trophy game area may periodically and temporarily disperse from the trophy animal area. Some of these dispersers would normally return to the northwest Wyoming's core of suitable habitat. The current regulatory framework substantially increases the odds that these periodic dispersers will not survive, thus, impacting Wyoming's wolf population including opportunities for genetic and demographic exchange. Wyoming's 2008 plan commits to maintain genetic connectivity, but under State law they have no management authority or means in the predatory animal area to actually fulfill that promise.

While the statute sets the legal maximum for Wyoming's trophy game area, ''This area may be diminished by rule of the commission if the commission determines the diminution does not impede the delisting of gray wolves and will facilitate Wyoming's management of wolves'' (Wyoming House Bill 0231, (xii)(l) p. 8). The first condition is not useful since wolves would have already been delisted for Wyoming's law to apply. As previously

determined (71 FR 43410, August 1, 2006), a smaller trophy game area is not sufficient to maintain Wyoming's share of a recovered NRM gray wolf population. Our previous analysis failed to consider the possibility that the WGFC would alter these boundaries. We now determine that a reduction in the trophy game area and expansion of the predatory area would further limit breeding pair occupancy in Wyoming and reduce opportunities for successful dispersal and genetic exchange.

Within the trophy game portions of the State, Wyoming State law mandates an ''aggressive'' wolf management strategy that we now determine is unlikely to conserve Wyoming's share of a recovered wolf population. One flaw with Wyoming's approach is the law's dependence on the National Parks to contribute at least 8 breeding pairs toward the total goal of at least 15 breeding pairs statewide. Such dependence could lead the Wyoming wolf population to quickly slide below recovery goals. While the National Parks will maintain more than 8 breeding pairs in most years, the National Parks' population will periodically fall below 8 breeding pairs. In 2005, disease and other factors caused the YNP population to fall to 118 wolves in 7 breeding pairs (Service *et al.* 2006). Preliminary data for 2008 indicates similar natural factors reduced the YNP population to 124 wolves in 6 breeding pairs (Smith 2008). Wyoming State law maintains that ''the (WGFC) shall promulgate rules and regulations requiring lethal control of wolves harassing * * * livestock and for wolves occupying areas where chronic wolf predation occurs.'' It goes on to state that ''permits shall be issued as long as there are seven (7) breeding pairs within the State and outside of YNP.'' The mandatory issuance of such lethal take permits are independent of predictions whether the year-end wolf population would be below 7 breeding pairs outside the National Parks or 15 breeding pairs or 150 wolves Statewide. The law allows for cancellation or suspension of permits only if further lethal control could cause the relisting of wolves.

Thus, State law mandates aggressive management until the population outside the National Parks fall to 6 breeding pairs. If such a management strategy had been fully implemented in 2008, when disease and other natural factors appear to have reduced the YNP population to 6 breeding pairs, the total Wyoming population would have fallen to the minimum recovery goal and any additional unregulated mortality (e.g., illegal killing, defense of property, control of problem wolves, death following dispersal into the predatory area) eliminating breeding pairs would have pushed the Wyoming wolf population below minimum recovery levels. We have long maintained that Wyoming, Montana, and Idaho must each manage for at least 15 breeding pairs and at least 150 wolves in mid-winter to ensure the population never falls below the minimum recovery goal of 10 breeding pairs and 100 wolves per State. As demonstrated here, Wyoming State law does not satisfy this standard. Thus, we now determine Wyoming State law would prevent Wyoming from maintaining its share of a recovered NRM wolf population into the foreseeable future.

On March 13, 2008, WGFC issued regulations implementing the law (Wyoming Chapter 21). These regulations further demonstrate the inadequacy of the regulatory framework established by State law. As noted above, State law requires lethal control of wolves where chronic wolf predation occurs. The WGFC's implementing regulations defined a ''chronic wolf predation area'' as any area where there were two or more livestock depredations over any time frame (Talbott 2008). The WGFC's March 25, 2008 wolf regulation guidance stipulated that once an area is deemed a chronic depredation area, the WGFD supervisor can issue permits without verification of predation. This interpretation meant that every part of the trophy game area outside the National Parks qualified as a chronic wolf predation area as every part of Wyoming has had two or more depredations on livestock by wolves since 1995 and that issuance of lethal take permits would be mandatory on the part of WGFD provided seven packs were present outside the National Parks in Wyoming, regardless of the number of wolves in National Parks. The changes made in the emergency WGFC regulations in 2008 largely rectified that problem of unregulated take in the trophy game area.

Shortly after our previous wolf delisting, WGFD issued its first trophy game area annual lethal take permit. This permit authorized lethal take of four wolves after the landowner reported seeing a wolf track on his private property. In early July, and despite no recent depredations, this same permit was modified by WGFD to include a total of nine people some of whom had no apparent connection to the property. In early May, a federal grazing permittee who had depredations on his allotment the previous summer requested that WGFD remove wolves prior to him placing his cattle on allotment or to provide him with a lethal control permit. As his grazing allotment was in the chronic wolf predation area (as was all of the trophy game area in Wyoming outside the National Parks), the WGFC regulations required them to issue the lethal take permit. Such examples demonstrate that the framework established by State law allows Wyoming to reduce their wolf population outside the National Parks to 6 breeding pairs regardless of whether the year-end wolf population would be below 7 breeding pairs outside the National Parks or 15 breeding pairs or 150 wolves Statewide.

At the point where we became aware of these implementing regulations, we began discussions with Wyoming about whether these regulations constituted an adequate regulatory mechanism. In response, WDGF asked the Wyoming Attorney General's Office to review the situation. On May 8, 2008, the Attorney General issued an opinion on the implementing regulation's definition of chronic wolf predation area. The regulation states '' 'Chronic wolf predation area' means a geographic area within the Wolf Trophy Game Management Area where gray wolves have repeatedly (twice or more) harassed, injured, maimed or killed livestock or domesticated animals.'' The opinion found that the regulations use of ''twice or more'' was ambiguous and that in order to meet the intent of the Statute that wolves not be relisted, the State should interpret ''twice or more'' to mean within a calendar year (Martin 2008, p. 1–5). Consequently, the State determined that WGFD may not initiate wolf control actions, including issuing lethal take permits, unless an area had two or more instances of wolves harassing, injuring, maiming or killing livestock or domestic animals since January 1 of that year. While this significantly improved implementation of their regulations, we remained concerned about this ambiguity.

Following this May 8, 2008, opinion, Wyoming indicated they would amend the regulations at their earliest opportunity. Revisions were finally made to their regulations after the District Court vacated and remanded our previous final rule.

On October 27, 2008, Wyoming issued emergency regulations and a revised wolf management plan. We have closely reviewed Wyoming's comments on the proposed delisting rule (Freudenthal 2008) and all changes to Wyoming's regulatory framework. While we believe the revised regulatory framework is a vast improvement over its predecessor, the emergency regulation is temporary (it is only in effect for 120 days). Thus,

we can not rely on it as an adequate regulatory mechanism. Most importantly, these regulatory improvements do not address the legislative shortcomings noted above (i.e., a trophy game area that can be diminished and a statute that encourages the WGFC to manage the population toward the minimum recovery goals in a manner that allows the possible reduction of the wolf population to below recovery levels.

We find that a regulatory framework for wolf management at minimum recovery levels is not adequate. Attempts to maintain any wildlife population at bare minimum levels are unlikely to be successful. As with all wildlife species, periodic disturbance or random events will occur. This fact was proven by the dramatic, but temporary changes, in wolves and breeding pairs in YNP in 2005 and 2008. Managing at minimal levels increases the likelihood that periodic disturbance or random events will leave the population below management objectives. Instead, the State wildlife agency should be given leeway in its management approach to compensate for periodic or random events, as Montana and Idaho have done. Managing to minimal recovery levels also increases the chances of genetic problems developing in the GYA population and would reduce the opportunities for demographic and genetic exchange in the WY portion to the GYA.

We also reviewed Wyoming's proposed 2008 hunting season regulation. While the proposed 2008 hunting season was not implemented, we determined it was well designed, biologically sound, and, by itself, it would not have threatened Wyoming's share of the recovered NRM wolf population. Wyoming's hunting season was designed around an allowable hunter-caused mortality in each of four hunting districts in the trophy game area. Hunting would end by November 30, or in each subquota as its individual quota is filled, or when 25 wolves had been harvested, whichever is sooner. This level of hunter-caused mortality would remove a small portion of the wolves in Wyoming outside the national parks. If other sources of mortality had been adequately regulated, this level of hunter harvest would likely have resulted in a Wyoming wolf population outside the national parks of just under 200 wolves by December 31, 2008 and nearly 400 wolves in the GYA. Because hunting harvest would end November 30, it would have had only minor negative impacts within the trophy game area on naturally dispersing wolves or the opportunity for effective genetic migrants into Wyoming. Wolves in YNP would not be substantially affected by a regulated public hunt, as hunting is not allowed in national parks and wolves rarely leave YNP during the time period when the fall hunting season would occur.

Considering all of the above, we now determine that Wyoming's regulatory framework does not provide the adequate regulatory mechanisms to assure that Wyoming's share of a recovered NRM wolf population would be conserved if the protections of the Act were removed (Gould 2009). Until Wyoming revises their statutes, management plan, and associated regulations, and is approved by the Service, wolves in Wyoming remain listed as experimental population in this portion of the NRM DPS. Specific required revisions are discussed in the Conclusion of the 5-Factor Analysis section of the rule below.

Washington—Wolves in Washington are listed as endangered under the State's administrative code (WAC 232.12.014; these provisions may be viewed at: *http://apps.leg.wa.gov/wac/*). Under Washington's administrative code (WAC 232.12.297), ''endangered'' means any wildlife species native to the State of Washington that is seriously threatened with extinction throughout all or a significant portion of its range within the State. Endangered species in the State of Washington are protected from hunting, possession, and malicious harassment, unless such taking has been authorized by rule of the Washington Fish and Wildlife Commission (RCW 77.15.120; these provisions can be viewed at: *http://apps.leg.wa.gov/rcw/*). If the NRM DPS is delisted, those areas in Washington included in the NRM DPS would remain listed as endangered by Washington State law until the wolf meets the statewide conservation objectives in the Washington Wolf Conservation and Management Plan. The Conservation objectives will establish the targets for downlisting to threatened, downlisting to sensitive status, and then delisting from sensitive status. The areas in Washington not included in the NRM DPS would remain listed as endangered under both State and Federal law until further rulemaking is proposed.

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 until summer 2008 when a breeding pair (at least an adult male and female and 6 pups) were confirmed near Twisp, Washington. Genetic analysis indicated that neither adult was related to the NRM wolves and had probably originated in central British Columbia. Intervening unsuitable habitat makes it highly unlikely that many wolves from the NRM population will disperse to the North Cascades of Washington in the future.

Washington State does not currently have a final wolf conservation and management plan for wolves. However, the State established a wolf working group advisory committee and is preparing a draft State gray wolf conservation and management plan (see *http://wdfw.wa.gov/wlm/diversty/soc/gray_wolf/*). That plan should be finalized in late 2009. Interagency Wolf Response Guidelines have been developed by the Service, Washington Department of Fish and Wildlife, and USDA WS to provide a checklist of response actions for five situations that may arise in the future (can be viewed at *http://wdfw.wa.gov/wlm/diversty/soc/gray_wolf/contacts.htm*. Wolf management in Washington may be beneficial to the NRM wolf population, but is not necessary for achieving or maintaining a population of wolves in the NRM DPS.

Oregon—The gray wolf has been classified as endangered under the Oregon Endangered Species Act (ORS 496.171–192) since 1987. The law requires the Oregon Fish and Wildlife Commission to conserve the species in Oregon. Anticipating the reestablishment of wolves in Oregon from the growing Idaho population, the Commission directed the development of a wolf conservation and management plan to meet the requirements of both the Oregon Endangered Species Act and the Oregon Wildlife Policy. ORS 496.012 states in part that ''It is the policy of the State of Oregon that wildlife shall be managed to prevent serious depletion of any indigenous species and to provide the optimum recreational and aesthetic benefits for present and future generations of the citizens of this State.''

In February 2005, the Oregon Fish and Wildlife Commission adopted the Oregon Wolf Conservation and Management Plan (Oregon 2005). The plan was built to meet the following five delisting criteria identified in State statutes and administrative rules: (1) The species is not now (and is not likely in the foreseeable future to be) in danger of extinction in any significant portion of its range in Oregon or in danger of becoming endangered; (2) the species' natural reproductive potential is not in danger of failure due to limited population numbers, disease, predation, or other natural or human-related factors affecting its continued existence;

(3) most populations are not undergoing imminent or active deterioration of range or primary habitat; (4) overutilization of the species or its habitat for commercial, recreational, scientific, or educational purposes is not occurring or likely to occur; and (5) existing State or Federal programs or regulations are adequate to protect the species and its habitat.

The Plan describes measures the Oregon Department of Fish and Wildlife (ODFW) will take to conserve and manage the species. These measures include actions that could be taken to protect livestock from wolf depredation and address human safety concerns. The following summarizes the primary components of the plan.

Wolves that naturally disperse into Oregon will be conserved and managed under the plan. Wolves will not be captured outside of Oregon and released in the State. Wolves may be considered for Statewide delisting once the population reaches four breeding pairs for 3 consecutive years in eastern Oregon. Four breeding pairs are considered the minimum conservation population objective, also described as Phase 1. The plan calls for managing wolves in western Oregon, as if the species remains listed, until the western Oregon wolf population reaches four breeding pairs. This means, for example, that a landowner would be required to obtain a permit to address depredation problems using injurious harassment.

While the wolf remains listed as a State endangered species, the following will be allowed: (1) Wolves may be harassed (e.g., shouting, firing a shot in the air) to distract a wolf from a livestock operation or area of human activity; (2) harassment that causes injury to a wolf (e.g., rubber bullets or bean bag projectiles) may be employed to prevent depredation, but only with a permit; (3) wolves may be relocated to resolve an immediate localized problem from an area of human activity (e.g., wolf inadvertently caught in a trap) to the nearest wilderness area; (4) relocation will be done by ODFW or USDA–WS personnel; (5) livestock producers who witness a wolf in the act of attacking livestock on public or private land must have a permit before taking any action that would cause harm to the wolf; and (6) wolves involved in chronic depredation may be killed by ODFW or USDA–WS personnel; however, nonlethal methods will be emphasized and employed first in appropriate circumstances.

Once the wolf is State-delisted, more options are available to address wolf-livestock conflict. While there are five to seven breeding pairs (the management population objective for Phase 2), landowners may kill a wolf involved in chronic depredation with a permit. Under Phase 3 (more than seven breeding pairs), a limited controlled hunt could be allowed to decrease chronic depredation or reduce pressure on wild ungulate populations.

The plan provides wildlife managers with adaptive management strategies to address wolf predation problems on wild ungulates if confirmed wolf predation leads to declines in localized herds. In the unlikely event that a person is attacked by a wolf, the plan describes the circumstances under which Oregon's criminal code and the Federal Act would allow harassing, harming or killing of wolves where necessary to avoid imminent, grave injury. Such an incident must be reported to law enforcement officials.

A strong information and education program will ensure anyone with an interest in wolves is able to learn more about the species and stay informed about wildlife management activities. The plan identifies several research projects as being necessary for future success of long-term wolf conservation and management in Oregon. Monitoring and radio-collaring wolves are listed as critical components of the plan both for conservation and communication with Oregonians. An economic analysis provides estimates of costs and benefits associated with wolves in Oregon and wolf conservation and management. Finally, the plan requires annual reporting to the Commission on program implementation.

The Oregon Wolf Management Plan, as approved by the Oregon Fish and Wildlife Commission in February 2005, called for three legislative actions which the 2005 Oregon Legislative Assembly considered, but did not adopt. In 2007, ODFW proposed the bill again in the state Legislature to make three legislative actions, but again they were not adopted. ODFW has no plans to reintroduce any wolf legislation in the 2009 session. These actions were: (1) Changing the legal status of the gray wolf from protected non-game wildlife to a ''special status mammal'' under the ''game mammal'' definition in ORS 496.004; (2) amending the wildlife damage statute (ORS 498.012) to remove the requirement for a permit to lethally take a gray wolf caught in the act of attacking livestock; and (3) creating a State-funded program to pay compensation for wolf-caused losses of livestock and to pay for proactive methods to prevent wolf depredation. As a result, the Fish and Wildlife Commission amended the Oregon Plan in December 2005 and rather than dropping the proposals, moved them from the body of the Plan to an appendix. The Commission remains on record as calling for those legislative enhancements; however, implementation of the Oregon Plan does not depend upon them.

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 (i.e., four breeding pairs for 3 consecutive years). Once the objective is achieved, the State delisting process will be initiated. Following delisting from the State Endangered Species Act, wolves will retain their classification as nongame wildlife under ORS 496.375.

Compared to Montana, Idaho, and Wyoming, the portion of the DPS containing suitable habitat within Oregon is small. We acknowledge that a few packs may become established within the DPS in Oregon; however, their role in the overall conservation of the NRM DPS is inherently small given the limited number of packs that habitat there is likely to support. That said, we encourage State efforts to conserve wildlife that is locally rare or endangered and we expect Oregon's wolf management approach to be beneficial to the NRM wolf population. We determine wolf management in Oregon is adequate to facilitate the maintenance of, and in no way threatens, the NRM DPS's recovered status.

Utah—If federally delisted, wolves in Utah's portion of the NRM DPS 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 DPS.

In 2003, the Utah Legislature passed House Joint Resolution 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 in the summer of 2003. The Wolf Working Group 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 (Utah 2005). 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 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 political, social, biological, or legal assumptions of the plan change. During this interim period, immigrating wolves will be studied to determine where they are most likely to settle without conflict.

Compared to Montana, Idaho, and Wyoming, the portion of the DPS containing suitable habitat within Utah is very small. Wolf management in Utah will have no effect on the recovered wolf population. We acknowledge that a few packs might become established within the DPS in Utah; however, their role in the overall conservation of the NRM DPS is inherently small given the limited number of packs that habitat there is likely to support. That said, we encourage State efforts to conserve wildlife that is locally rare or endangered and we expect Utah's wolf management approach to be beneficial to the NRM wolf population. We determine wolf management in Utah is adequate to facilitate the maintenance of, and in no way threatens, the NRM DPS's recovered status.

Tribal Plans—Approximately 20 Tribes are within the NRM DPS. Currently, perhaps only 1 or 2 wolf packs are entirely dependent on Tribal lands for their existence in the NRM DPS. In the NRM DPS about 32,942 km^2 (12,719 mi^2) (3 percent) of the area is Tribal land. In the NRM wolf occupied habitat, about 4,696 km^2 (1,813 mi^2) (2 percent) is Tribal land (Service 2006; 71 FR 6645, February 8, 2006). Therefore, while Tribal lands can contribute some habitat for wolf packs in the NRM, they will be relatively unimportant to maintaining a recovered wolf population in the NRM DPS. Many wolf packs live in areas of public land where Tribes have various treaty rights, such as wildlife harvest. The States agreed to incorporate Tribal harvest into their assessment of the potential surplus of wolves available for public harvest in each State, each year, to ensure 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 in this proposed rule depends entirely on State-led management of wolves that are primarily on lands where resident wildlife is traditionally managed primarily by the State. Any wolves that may establish themselves on Tribal lands will be in addition to those managed by the State outside Tribal reservations. At this point in time, only the Wind River Tribe (Wind River Tribe 2007) has an approved tribal wolf management plan for its lands. In addition, Nez Perce Tribe had a Service wolf management plan approved in 1995, but that plan only applied to listed wolves. It was approved by the Service so the Tribe could take a portion of the responsibility for wolf monitoring and management in Idaho under the special regulation under section 10(j). While the Blackfeet Tribe has a wolf management plan, Blackfeet Tribal lands are not in the experimental population area. Therefore, all wolf management on Blackfeet Tribal lands has been directed by Service guidelines (Service 1999). No other Tribe has submitted a wolf management plan.

In November 2005, the Service requested information from all Tribes in the NRM regarding their Tribal regulations and any other relevant information regarding Tribal management or concerns about wolves (Bangs 2004). All responses were reviewed and addressed, including incorporation into the rule where appropriate.

Compared to Montana, Idaho, and Wyoming, the portion of the DPS containing suitable habitat within Tribal lands is small. We acknowledge that a few packs may become established within the DPS on Tribal lands; however, their role in the overall conservation of the NRM DPS is inherently small given the limited number of packs that habitat there is likely to support. That said, we encourage State efforts to conserve wildlife that is locally rare or endangered and we expect Washington's wolf management approach to be beneficial to the NRM wolf population. We determine wolf management on Tribal lands is adequate to facilitate the maintenance of, and in no way threatens, the NRM DPS's recovered status.

Summary—We have determined that adequate regulatory mechanisms are in place in all portions of the NRM DPS except Wyoming. Montana and Idaho have committed to manage for at least 15 breeding pairs and at least 150 wolves in mid-winter to ensure the population never falls below 10 breeding pairs and 100 wolves in either State. All sources of mortality will be carefully managed. State projections indicate that the NRM wolf population in Montana and Idaho will be managed for around 673 to 1,002 wolves in 52 to 79 breeding pairs. As long as populations are maintained well above minimal recovery levels, wolf biology (namely the species' reproductive capacity) and the availability of large, secure blocks of suitable habitat will maintain strong source populations capable of withstanding all other foreseeable threats.

Wyoming's regulatory framework does not provide the adequate regulatory mechanisms to assure that Wyoming's share of a recovered NRM wolf population would be conserved if the protections of the Act were removed. We determine that revision of Wyoming's wolf management law is necessary (Gould 2009). This revision will then provide the foundation for Wyoming's larger regulatory framework, including the State's wolf management plan and implementing regulations so that it assures conservation of the gray wolf rather than focus on aggressive control. Until Wyoming revises their statutes, management plan, and associated regulations, and is again Service approved, wolves in Wyoming continue to require the protections of the Act.

Compared to Montana, Idaho, and Wyoming, the portion of the DPS containing suitable habitat within Oregon, Washington, Utah, and Tribal lands is small. We acknowledge that a few packs may become established within these portions of the DPS; however, their role in the overall conservation of the NRM DPS is inherently small given the limited number of packs that habitat there is likely to support. That said, we encourage State and Tribal efforts to conserve wildlife that is locally rare or endangered and we expect wolf management in these areas to be beneficial to the NRM wolf population. Any wolf breeding pairs that do become established in these areas would be in addition to those necessary to maintain the wolf population above recovery levels. The adjacent States of Utah, Oregon, and Washington all have in

place laws protecting wolves that would remain in effect after delisting. Utah, Oregon, and the Wind River Tribe have adopted beneficial wolf management plans and Washington is currently finalizing one. We determine wolf management in these areas is adequate to facilitate the maintenance of, and in no way threatens, the NRM DPS's recovered status.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Public Attitudes Toward the Gray Wolf—Human attitudes toward wolves is the main reason the wolf was listed under the Act. These attitudes are largely based on the real and perceived conflicts between human activities and values and wolves, such as depredation on livestock and pets, competition for surplus wild ungulates between hunters and wolves, concerns for human safety, wolves' symbolic representation of wildness and ecosystem health, the economic costs and benefits, killing of wolves by people, and the wolf-related traditions of Native American Tribes or local culture.

Public hostility toward wolves led to the excessive human-caused mortality that extirpated the species from the NRM DPS in the 1930s. Such attitudes toward wolves are deeply ingrained in some individuals and continue to affect human tolerance of wolves. The predatory animal designation in Wyoming underscores this point. Wyoming's 2003 State law and wolf management plan essentially confined wolves to Wyoming's National Parks and wilderness areas. In 2007, Wyoming mandated wolves be classified as predatory animals in at least 88 percent of the State and allowed this area to be expanded if the WGFC ''determines the diminution does not impede the delisting of gray wolves and will facilitate Wyoming's management of wolves.'' Such a management strategy is not required to manage wolf density and distribution and was not used by other States.

Because of the impact that public attitudes can have on wolf recovery, we are requiring adequate regulatory mechanisms to be in place that will balance negative attitudes towards wolves in the places necessary for recovery. As discussed extensively in Factor D, we find that the management plans in Idaho and Montana adequately protect wolves from this threat. However, the regulatory mechanisms in Wyoming are currently insufficient to protect the wolves in that State from some of the outcomes that occur when the public has negative perceptions regarding wolf presence.

Outside of Wyoming, all the other States in the NRM DPS appear to have reached an acceptable compromise balancing the needs of the species and the diverse opinions of their citizens. Montana and Idaho have passed laws and regulations that implement a balanced and socially acceptable program that meets the legal requirements of the Act, promotes occupancy of suitable habitat in a manner that minimizes damage to private property, allows for continuation of traditional western land-uses such as grazing and hunting, and allows for direct citizen participation in and funding for State wolf management (State defense of property and hunting regulations). With the continued help of private conservation organizations, Montana, Idaho, and the Tribes will continue to foster public support to maintain recovered wolf populations in the NRM DPS. Post-delisting management by Montana and Idaho will further enhance local public support for wolf recovery (Bangs 2008). State management provides a larger and more effective local organization and a more familiar means for dealing with these conflicts (Mech 1995, pp. 275–276; Williams *et al.* 2002, p. 582; Bangs *et al.* 2004, p. 102; Bangs *et al.* in press, Bangs 2008). State wildlife organizations have specific departments and staff dedicated to providing accurate and science-based public education, information, and outreach (Idaho 2007, p. 23–24, Appendix A; Montana 2003, p. 90–91). The comprehensive approach to wolf management in Montana and Idaho ensures human attitudes toward wolves should not again threaten each state's contribution to a recovered wolf population. The neighboring States of Washington, Oregon, and Utah, as well as many of the Tribes, have also developed regulatory mechanisms that balance the needs of the species and the diverse opinions of their citizens in order to facilitate the maintenance of, and in no way threaten, the NRM DPS's recovered status.

Genetic Considerations—Currently, genetic diversity throughout the NRM DPS is very high (Forbes and Boyd 1996, p. 1084; Forbes and Boyd 1997, p. 226; vonHoldt *et al.* 2007, p. 19; vonHoldt *et al.* 2008). Contemporary statistics for genetic diversity from 2002–2004 for central Idaho, northwestern Montana, and the GYA, respectively are; n = 85, 104, 210; allelic diversity = 9.5, 9.1, 10.3; observed heterozygosity = 0.723, 0.650, 0.708; expected heterozygosity = 0.767, 0.728, 0.738. (vonHoldt *et al.* 2008). These levels have not diminished since 1995. The high allelic diversity (a measure of the richness of genetic material available for natural selection to act on) and the high heterozygosity (a measure of how gene forms are packaged in an individual, with high heterozygosity tending to lead to higher fitness) demonstrate all subpopulations within the NRM wolf populations have high standing levels of genetic variability. In short, wolves in northwestern Montana and both the reintroduced populations are as genetically diverse as their vast, secure, healthy, contiguous, and connected populations in Canada; thus, inadequate genetic diversity is not a wolf conservation issue in the NRM at this time (Forbes and Boyd 1997, p. 1089; vonHoldt *et al.* 2007, p. 19; vonHoldt *et al.* 2008). This genetic health is the result of deliberate management actions by the Service and its cooperators since 1995 (Bradley *et al.* 2005).

Genetic exchange at one effective migrant (i.e., a breeding migrant that passes on its genes) per generation is enough to ensure that genetic diversity will remain high (Mills 2007, p. 193). Wolves have an unusual ability to rapidly disperse long distances across virtually any habitat and select mates to maximize genetic diversity. Thus, wolves are among the least likely species to be affected by inbreeding when compared to nearly any other species of land mammal (Fuller *et al.* 2003, 189–190; Paquet *et al.* 2006, p. 3; Liberg 2008, p. 1). The northwestern Montana and central Idaho core recovery areas are well connected to each other, and to large wolf populations in Canada, through regular dispersals (Boyd *et al.* 1995; Boyd and Pletscher 1999; Jimenez *et al.* 2008d; vonHoldt *et al.* 2007; vonHoldt *et al.* 2008).

While the GYA is the most isolated core recovery area within the NRM DPS (Oakleaf *et al.* 2005, p. 554; vonHoldt *et al.* 2007, p. 19), radio telemetry data demonstrate that the GYA is not isolated as wolves regularly disperse into the area from the other recovery areas. For example, in 2002, a collared wolf from Idaho dispersed into Wyoming and became the breeding male of the Greybull pack near Meeteetse. In 2009, a male disperser from central Idaho (whose father dispersed from YNP to central Idaho) likely bred with a female in the GYA and is establishing a new pack east of YNP. He also associated with the newly formed Evert pack in YNP in 2008 (Smith 2008). Since only about 30 percent of the NRM wolf population has been radio-collared, other unmarked wolves from Idaho or

northwestern Montana have undoubtedly made the journey to the GYA and successfully bred. While vonHoldt *et al.* (2007) found no evidence of gene flow into YNP, an expanded analysis by vonHoldt *et al.* (2008) has demonstrated gene flow by naturally dispersing wolves form other recovery areas into the GYA.

Overall, data from radio-collared wolves indicates that at least one wolf naturally disperses into the GYA each year and at least 4 radio-collared non-GYA wolves have bred and produced offspring in the GYA in the past 12 years (1996–2008). Undoubtedly, other uncollared wolves have also naturally dispersed into and bred in the GYA (Wayne 2009, pers. comm.). Since a wolf generation is approximately 4 years, there has been over one effective migrant per generation in the GYA wolf population. This amount of migration exceeds the widely accepted effective migrant per generation rule. This rule, widely accepted by conservation biology and genetic literature, holds that one breeding immigrant per generation should allow for local evolutionary adaptation while minimizing negative effects of genetic drift and inbreeding depression (Mills 2008).

State and Federal management post-delisting will continue to ensure potential for natural genetic exchange. Wolves will be managed at high levels and human caused mortality will be purposely limited during peak periods of dispersal. Management practices, committed to in State management plans, will increase the potential to naturally incorporate effective migrants include: Reducing the rate of population turnover and fostering persistent wolf packs in all or select core recovery segments or all or select areas of suitable habitat (Oakleaf *et al.* 2005; 72 FR 6106, February 8, 2007); periodically creating localized disruptions of wolf pack structure or modified wolf density in select areas of suitable habitat to create social vacancies or space for dispersing wolves to fill; maintaining higher rather than lower overall wolf numbers in all or select recovery areas; maintaining more contiguous and broader wolf distribution instead of disjunction and limited breeding pair distribution; minimizing mortality between and around core recovery segments during critical wolf dispersal and breeding periods (December through April); and reducing the rates of mortality in core recovery segments during denning and pup rearing periods (April through September).

Montana and Idaho have already incorporated most of these types of management practices into their wolf management frameworks. Furthermore, Montana and Idaho have designed their management practices, especially hunting seasons, to maintain relatively high wolf numbers and distribution throughout suitable habitat and to protect dispersing wolves from harvest during peak dispersal, breeding and pup rearing periods. In addition, problem wolf control is restricted to recent depredation events which are uncommon during peak dispersal periods. These measures should ensure dispersal toward the GYA from northwest Montana and central Idaho continues.

Additionally, connectivity across the NRM will remain a high priority issue for the Service and our partner wildlife agencies. A process to identify, maintain and improve wildlife movement areas between the large blocks of public land in the NRM is ongoing (Servheen *et al.* 2003, p. 3). This interagency effort involves 13 State and Federal agencies working on linkage facilitation across private lands, public lands, and highways (Interagency Grizzly Bear Committee 2001, pp. 1–2; Brown 2006, p. 1–3). To date, this effort has included—(1) development of a written protocol and guidance document on how to implement linkage zone management on public lands (Public Land Linkage Taskforce 2004, pp. 3–5); (2) production of several private land linkage management documents (Service 1997; Parker and Parker 2002, p. 2); (3) analyses of linkage zone management in relation to highways (Geodata Services Inc. 2005, p. 2; Waller and Servheen 2005, p. 998); and (4) a workshop in the spring of 2006 on implementing management actions for wildlife linkage (the proceedings of which are available online at: *http://www.cfc.umt.edu/linkage*). The objective of this work is to maintain and enhance movement opportunities for all wildlife species across the NRM. Although this linkage work is not directly associated with the wolf population, it should benefit wolves even after delisting.

Successful natural migration into the GYA is also dependant upon Wyoming. Specifically, wolves must not only be able to get to Wyoming but they must be able to traverse large portions of it for extended periods of time, to survive long enough to find a mate in suitable habitat and reproduce. Wyoming's current regulatory framework for delisted wolves minimizes the likelihood of successful migration into the GYA. Under current State law, wolves are classified as predatory animals in at least 88 percent of the State. Wolves are unlikely to survive long in portions of Wyoming where they are regulated as predatory animals. As most wolves tend to disperse in winter, dispersing wolves tend to travel through valleys where snow depths are lowest and wild prey is concentrated. Likely wolf dispersal patterns indicate that dispersing wolves moving into the GYA from Idaho or Montana tend to move through the predatory area (Oakleaf *et al.* 2005, p. 559). Physical barriers (such as high-elevation mountain ranges that are difficult to traverse in winter) appear to discourage dispersal through the National Parks' northern and western boundaries. Limited social openings in the National Parks' wolf packs also direct wolves dispersing from Idaho and Montana around the National Parks and toward the predatory area portions of Wyoming. Furthermore, Wyoming's maintains 22 winter elk feeding grounds that support thousands of wintering elk. These areas attract and could potentially hold dispersing wolves in the predatory area. Many dispersing wolves in Wyoming, and even some established breeding pairs, temporarily leave their primary territory to visit the elk feed grounds in winter. Twelve of the 22 elk feed grounds are currently in Wyoming's predatory animal area. Potential expansion of the predatory animal area, as allowed by Wyoming's current statute, could further limit breeding pair occupancy in Wyoming and would reduce opportunities for successful dispersal and genetic exchange.

We believe Wyoming must institute additional protections to facilitate natural genetic exchange in order to constitute an adequate regulatory mechanism. Specifically, the State's regulatory framework should minimize take in all suitable habitat and across all of Wyoming's potential migration routes among NRM subpopulations. This management is particularly important during peak dispersal, breeding, and pup rearing periods. In addition to requiring that Wyoming manage for at least 15 breeding pairs and at least 150 wolves in mid-winter in their State, Wyoming must also manage for at least 7 breeding pairs and at least 70 wolves in Wyoming outside the National Parks. Such requirements are necessary to preserve connectivity and allow for a buffer to ensure that the population will not drop down below the minimum number of wolves necessary for recovery. This secondary goal will provide dispersing wolves more social openings and protection from excessive human-caused mortality. This strategy will also maintain a sufficiently large number of wolves in the GYA; larger

population size is a proven remedy to genetic inbreeding.

Implementation of the recently completed MOU (Groen *et al.* 2008) makes it even more unlikely that agency-managed genetic exchange would be necessary in the foreseeable future. This MOU recognizes that genetic diversity is currently very high throughout the NRM DPS and commits to establish and maintain a monitoring protocol to ensure that necessary levels of gene flow occur so that the population retains high levels of genetic diversity and its recovered status (Groen *et al.* 2008).

Population levels across the NRM DPS could also impact gene flow. The delisted NRM DPS wolf population is likely to be reduced from its current levels of around 1,639 wolves by State management. However, wolf populations in the three States containing most of the occupied and most of the suitable habitat in the NRM DPS will be managed for at least 15 breeding pairs and at least 150 wolves so that the population never goes below recovery levels. State projections indicate they will manage the population at least two to three times this minimal recovery level and likely over 1,000 wolves.

Natural wolf dispersal between all recovery areas has occurred when the wolf population was far below 1,000 wolves (the first wolf to disperse from northwestern Montana to the GYA occurred in 1992 when there were only 41 wolves and 4 breeding pairs in the NRM, and in 2002 a radio-collared wolf from central Idaho dispersed into the GYA to form the Greybull pack when there were only 663 wolves in 49 breeding pairs). Therefore, we believe state management of a population below 1,000 wolves is unlikely to significantly reduce the overall rate of dispersal in the NRM. If the population is managed for over a thousand wolves, as expected, we believe the impact on dispersal and connectivity will be negligible. If the population is managed to the minimum recovery target of 150 wolves per State, we expect dispersal to noticeably decrease. Nevertheless, dispersal events still occurred even when wolf populations were low, and when mortality averaged 26 percent of the population annually. We expect adequate levels of dispersal will continue given the State's commitment to manage well above minimal recovery goals. Yearling and other young wolves must disperse to find unrelated mates (wolves strongly seek nonrelated wolves as mates). This social event is a basic function of wolf populations and occurs regardless of the numbers, density, or presence of other wolves (Mech and Boitani 2003, p. 11–180).

Wolf biology also provides some assurance that levels of gene flow will be sufficient to avoid the threat of loss of genetic diversity. Natural wolf mate selection shows that future dispersers into a system experiencing some level of inbreeding would be much more likely to be selected for breeding and have their genes incorporated into the inbred population (Bensch *et al.* 2006, p. 72; vonHoldt *et al.* 2007, p. 1). Thus, introduction of just one or two new genetic lines can substantially benefit, although not completely remedy, conservation issues related to low genetic diversity (Vila *et al.* 2003, p. 9; Liberg *et al.* 2004; Liberg 2005, pp. 5–6; Mills 2007, pp. 195–196; Fredrickson *et al.* 2007, p. 2365; Vila 2008).

We recognize additional research on the appropriate level of gene flow relative to the population size is ongoing. Post-delisting, we expect the GYA population will be managed for more than 300 wolves across portions of the GYA in Montana, Idaho, and Wyoming (63,700 km^2 (24,600 mi^2)). Maintenance at such levels, combined with expected levels of gene flow, indicates genetic diversity will not threaten this wolf population. The other recovery areas face even lower threat levels related to future genetic diversity. The recently completed memorandum of understanding ensures this issue will be appropriately managed into the foreseeable future by the NRM DPS's State and Federal partners as new information comes to light (Groen *et al.* 2008).

As with all models, theoretical predictions concerning viability rely upon the quality and accuracy of the data being inputted. In most cases, available theoretical predictions of genetic factors impacting wolf population viability have proven poor predictors of actual status of very small wolf populations (Fritts and Carbyn 1995; Boitani 2003; Fuller *et al.* 2003, 189–190). Review of the scientific literature shows that, throughout the world, truly isolated wolf populations that are far smaller and far less genetically diverse than the GYA population have persisted for many decades and even centuries (Fritts and Carbyn 1995, p. 33; Boitani 2003, pp. 322–23, 330–335; Fuller *et al.* 2003, p. 189–190; Liberg 2005, pp. 5–6; 73 FR 10514, February 27, 2008). Even the Mexican wolf with its extremely limited genetic diversity (only 7 founders) is not threatened by reduced genetic diversity where the addition of a single new genetic line reversed inbreeding depression (Fredrickson *et al.* 2007). A wolf population on Isle Royale National Park that started from 2 or 3 founders in 1949 and remained very small (<50 wolves, long term effective population size 3.8) has persisted until the present time (Boitani 2003, p. 330). While this population's key demographic properties (Fuller *et al.* 2003) are comparable to outbred populations of wolves, being founded from such a small number of individuals and maintenance at such extremely low levels for such a long time has resulted in a congenital malformation in the vertebrae column and might eventually effect its population dynamics (Raikkonen *et al.* in review). This extreme case will not occur anywhere in the NRM DPS.

A more relevant example is the Kenai Peninsula wolf population. This area is somewhat developed and connected to the mainland by 16 km (10 mi) of glacier and rugged mountains. Wolves were extirpated there by 1919. A few wolves naturally recolonized it in the 1960's and bred in the mid- 1960's. The wolf population grew rapidly and within 10 years it occupied all suitable wolf habitat (roughly 15,500 km^2 (6,000 mi^2)). It has remained relatively stable for the past 35 years despite being isolated, small (<200 wolves), liberally hunted and trapped, and exposed to typical wolf diseases and parasites. The population is not threatened (Peterson *et al.* 1994, p. 1) and remains genetically fit (Talbot and Scribner 1997, p. 20–21). Because the NRM wolf population will be managed well above this level, we are confident that the theoretical predictions of inbreeding are highly unlikely to occur. We find that actual data concerning genetic diversity in wolves and wolf population persistence is a better predictor of future outcomes than theoretical models.

In all but the most extreme cases, small wolf populations are unlikely to be threatened solely by the loss of genetic diversity (Boitani 2003, p. 330). In fact, none of the highly inbred recovering populations from around the world have ever gone extinct or failed to recover because of low genetic diversity (Fuller *et al.* 2003, p. 189–190). It is our current professional judgment that even in the highly unlikely event that no new genes enter YNP or the GYA in the next 100 years, that wolf population's currently high genetic diversity would be slightly reduced, but not to the point the GYA wolf population would be threatened. Even the totally isolate, highly inbred, and very small (never more than 50 wolves) Isle Royale wolf population has persisted for over 60 years and has still maintained similar demographics

compared to other non-inbred wolf populations. The NRM wolf population does not currently have and will not have such severe issues. Furthermore, from a purely biological perspective, the NRM DPS is a 400-mile southwestern extension of a North American wolf population consisting of many tens of thousands of individuals, and its recovery is not even remotely comparable to other situations where concerns about genetic diversity have been raised.

VonHoldt *et al.* (2007) concluded ''if the YNP wolf population remains relatively constant at 170 individuals (estimated to be YNP carrying capacity), the population will demonstrate substantial inbreeding effects within 60 years,'' resulting in an ''increase in juvenile mortality from an average of 23 to 40%, an effect equivalent to losing an additional pup in each litter.'' The vonHoldt *et al.* (2007) prediction of eventual inbreeding in YNP relies upon several unrealistic assumptions. One such assumption limited the wolf population analysis to YNP's (8,987 km^2 (3,472 mi^2)) carrying capacity of 170 wolves, instead of the 449 that currently occupy the GYA and the more than 300 wolves to be managed for in the entire GYA (63,700 km^2 (24,600 mi^2)) by Montana, Idaho, and Wyoming. YNP is only 14 percent of the area in the GYA and only contains about a third of the wolves in the GYA wolf population. Wolf pack territories in YNP are contiguous with those outside YNP in the GYA. The vonHoldt *et al.* (2007) predictive model also capped the population at the YNP population's winter low point, rather than at higher springtime levels when pups are born. Springtime levels are sometimes double the winter low.

As explained in the recovery section above, wolf recovery in the NRM never depended solely on natural dispersal. Should genetic issues ever materialize, an outcome we believe is extremely unlikely, the MOU provides a failsafe in that it ensures States will implement techniques to facilitate agency-managed genetic exchange (moving individual wolves or their genes into the affected population segment) (Groen *et al.* 2008). Human intervention in maintaining recovered populations is necessary for many conservation-reliant species and a well-accepted practice in dealing with population concerns (Scott *et al.* 2005). The 1994 wolf reintroduction EIS indicated that intensive genetic management might become necessary if any of the sub-populations developed genetic demographic problems (Service 1994, p. 6–74). The 1994 EIS stated that other wildlife management programs rely upon such agency-managed genetic exchange and that the approach should not be viewed negatively (Service 1994, p. 6–75). Human-assisted genetic exchange is a proven technique that has created effective migrants in the NRM DPS. An example of successful managed genetic exchange in the NRM population was the release of 10 wolf pups and yearlings translocated from northwestern Montana to YNP in the spring of 1997. Two of those wolves become breeders and their genetic signature is common throughout YNP and the GYA (vonHoldt 2008). Wolves could easily be moved again in the highly unlikely event that inbreeding or other problems ever threaten any segment of the NRM wolf population. Other future agency-managed genetic exchange could include other means of introducing novel wolves or their genes into a recovery area if it were ever to be needed. At this time, such approaches remain unnecessary and are highly likely to remain unneeded in the future.

Given the NRM populations' current high genetic diversity, proven connectivity, the strong tendency of wolves to outbreed (choose mates not related to themselves), large area and distribution of core refugia, the vast amounts of suitable habitat, and future management options, including agency-managed genetic exchange, the NRM wolf population will not be threatened by lower genetic diversity in the foreseeable future.

Climate Change—While there is much debate about the rates at which carbon dioxide levels, atmospheric temperatures, and ocean temperatures will rise, the Intergovernmental Panel on Climate Change (IPCC), a group of leading climate scientists commissioned by the United Nations, concluded there is a general consensus among the world's best scientists that climate change is occurring (IPCC 2001, pp. 2–3; IPCC 2007, p. 4). The twentieth century was the warmest in the last 1,000 years (Inkley *et al.* 2004, pp. 2–3) with global mean surface temperature increasing by 0.4 to 0.8 degrees Celsius (0.7 to 1.4 degrees Fahrenheit). These increases in temperature were more pronounced over land masses as evidenced by the 1.5 to 1.7 degrees Celsius (2.7 to 3.0 degrees Fahrenheit) increase in North America since the 1940s (Vincent *et al.* 1999, p.96; Cayan *et al.* 2001, p. 411). According to the IPCC, warmer temperatures will increase 1.1 to 6.4 degrees Celsius (2.0 to 11.5 degrees Fahrenheit) by 2100 (IPCC 2007, pp. 10–11). The magnitude of warming in the NRM has been greater, as indicated by an 8-day advance in the appearance of spring phenological indicators in Edmonton, Alberta, since the 1930s (Cayan *et al.* 2001, p. 400). The hydrologic regime in the NRM also has changed with global climate change, and is projected to change further (Bartlein *et al.* 1997, p. 786; Cayan *et al.* 2001, p. 411; Stewart *et al.* 2004, pp. 223–224). Under global climate change scenarios, the NRM may eventually experience milder, wetter winters and warmer, drier summers (Bartlein *et al.* 1997, p. 786). Additionally, the pattern of snowmelt runoff also may change, with a reduction in spring snowmelt (Cayan *et al.* 2001, p. 411) and an earlier peak (Stewart *et al.* 2004, pp. 223–224), so that a lower proportion of the annual discharge will occur during spring and summer.

Even with these changes, climate change should not threaten the NRM wolf population. Wolves are habitat generalists and next to humans are the most widely distributed land mammal on earth. Wolves live in every habitat type in the Northern Hemisphere that contains ungulates, and once ranged from central Mexico to the Arctic Ocean in North America. The NRM DPS is roughly in the middle of historic wolf distribution in North America. Because historic evidence suggests gray wolves and their prey survived in hotter, drier environments, including some near desert conditions, we expect wolves could easily adapt to the slightly warmer and drier conditions that are predicted with climate change, including any northward expansion of diseases, parasites, new prey, or competitors or reductions in species currently at or near the southern extent of their range.

Changing climate conditions have the potential to impact wolf prey. There is new evidence that declining moose populations in the southern GYA are likely a result of global warming (Service 2008), a conclusion that has been reached in other parts of the southern range of moose in North America. However, the extent and rate to which most ungulate populations will be impacted is difficult to foresee with any level of confidence. One logical consequence of climate change could be a reduction in the number of elk, deer, moose, and bison dying over winter, thus maintaining a higher overall prey base for wolves (Wilmers and Getz 2005, p. 574; Wilmers and Post 2006, p. 405). Furthermore, increased over-winter survival would likely result in overall increases and more resiliency in ungulate populations, thereby providing more prey for wolves.

Catastrophic Events—The habitat model/PVA by Carroll *et al.* (2003, p.

543) analyzed environmental stochasticity and predicted it was unlikely to threaten wolf persistence in the GYA. We also considered catastrophic and stochastic events that might reasonably occur in the NRM DPS within the foreseeable future (for example we did not consider tidal waves) to the extent possible. None of these factors are thought to pose a significant risk to wolf recovery in the foreseeable future. With regard to wildfires, which humans often view as catastrophic events, large mobile species such as wolves and their ungulate prey usually are not adversely impacted. Wildfires in the NRM often lead to an increase in ungulate food supplies and an increase in ungulate numbers, which in turn supports increased wolf numbers. Wolves are an exceptionally resilient species.

Impacts to Wolf Pack Social Structure—When human-caused mortality rates are low, packs contain older individuals. Such ''natural'' pack structures are limited to National Parks and large, remote wilderness areas. These ''natural'' social structures will continue unaltered in those areas after wolves are delisted.

However, wolves in much of the NRM DPS constantly interact with livestock and people. These areas experience higher rates of mortality which alters pack structure. We have removed 988 problem wolves in the NRM since 1987 and have monitored the effect of removing breeders or other pack members on wolf packs structure and subsequent breeding. Those effects were minor and would certainly not affect wolf population recovery in the NRM (Brainerd *et al.* 2007). Although defense of property laws in Montana and Idaho are similar to current nonessential experimental regulations, such mortality may increase slightly after delisting in those States. In addition, regulated hunting will be allowed by the States which will increase wolf mortality rates.

Wolf packs frequently have high rates of natural turnover (Mech 2007, p. 1482) and quickly adapt to changes in pack social structure (Brainerd *et al.* 2007). Higher rates of human-caused mortality also may simply compensate for some forms of natural mortality (Fuller *et al.* 2003, p. 185–186). Thus, the potential effects caused by natural wolf pack dynamics in much of the NRM DPS will be moderated by varying degrees by conflicts with humans and rates of human-caused mortality (Campbell *et al.* 2006, p. 363; Garrott *et al.* 2005; p. 7–9). Higher rates of human-caused mortality outside protected areas will result in different wolf pack size and structure than that in protected areas, but wolves in many parts of the world, including most of North America, experience various levels of human-caused mortality and the associated disruption in natural processes and wolf social structure without ever threatening the population (Boitani 2003). Therefore, while human caused mortality may alter pack structure, we have no evidence that indicates this in anyway threatens the NRM DPS.

Summary of Factor E—No other manmade and natural factors threaten wolf population recovery now or in the foreseeable future throughout the majority of the NRM DPS. Public attitudes toward wolves have improved greatly over the past 30 years. We expect that, given adequate continued management of conflicts, those attitudes will continue to support wolf restoration. As stated previously, the regulatory mechanisms in Wyoming are currently insufficient to protect the wolves in that State from some of the outcomes that occur when the public has negative perceptions regarding wolf presence. We find this threat to be closely tied with all mortality management as we discussed extensively in Factor D.

The State wildlife agencies have professional education, information, and outreach components and will continue 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.

We also have determined that wolf genetic viability, interbreeding coefficients, genetic drift, or changes in wolf pack social structure are unlikely to threaten the wolf population in the NRM DPS in the foreseeable future. But in the highly unlikely event that the GYA population segment was threatened by a loss of genetic diversity, that threat could be easily resolved by reintroduction or other deliberate management actions, as promised by Montana and Idaho, if it ever became necessary.

Conclusion of the 5-Factor Analysis

Is the Species Threatened or Endangered throughout ''All'' of its Range—As required by the Act, we considered the five potential threat factors to assess whether the gray wolf in the NRM DPS is threatened or endangered throughout all or a significant portion of its range. When considering the listing status of the species, the first step in the analysis is to determine whether the species is in danger of extinction throughout all of its range. If this is the case, then the species is listed in its entirety.

Human-caused mortality is the most significant issue to the long-term conservation status of the NRM DPS. Therefore, managing this source of mortality (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 into the foreseeable future. We have concluded that Montana and Idaho will maintain their share and distribution of the NRM wolf population above recovery levels for the foreseeable future. Both States have wolf management laws, plans, and regulations that adequately regulate human-caused mortality. Both States have committed to manage for at least 15 breeding pairs and at least 150 wolves in mid-winter to ensure the population never falls below 10 breeding pairs and 100 wolves in either State. State projections indicate that the NRM wolf population in Montana and Idaho will likely be managed for around 673 to 1,002 wolves in 52 to 79 breeding pairs.

As described in more detail in Factor D and below, Wyoming's regulatory framework does not provide the adequate regulatory mechanisms to assure that Wyoming's share of a recovered NRM wolf population would be conserved if the protections of the Act were removed. In order to constitute adequate regulatory mechanisms, Wyoming's regulatory framework needs to: Designate and manage wolves as a trophy game species statewide; manage for at least 15 breeding pairs and at least 150 wolves in mid-winter in their State and at least 7 breeding pairs and at least 70 wolves in mid-winter outside the National Parks; authorize defense of property take in a manner that is similar to the current regulatory scheme; consider all sources of mortality, including all hunting and defense of property mortality, in its total statewide allowable mortality levels; and manage the population to maintain high levels of genetic diversity and to continue ongoing genetic exchange. Until Wyoming revises their statutes, management plan, and associated regulations, and is again Service approved, wolves in Wyoming continue to require the protections of the Act.

Regulatory mechanisms in all surrounding States are adequate to facilitate the maintenance of, and in no way threaten, the NRM DPS's recovered status. All wolves in these surrounding areas will be regulated by the States as at least a game species (some provide greater protections). Violation of State

regulations will be subject to prosecution.

As long as populations are maintained well above minimal recovery levels, wolf biology (namely the species' reproductive capacity) and the availability of large, secure blocks of suitable habitat will maintain strong source populations capable of withstanding all other foreseeable threats. In terms of habitat, the amount and distribution of suitable habitat in public ownership provides, and will continue to provide, large core areas that contain high-quality habitat of sufficient size to anchor a recovered wolf population. Our analysis of land-use practice shows these areas will maintain their suitability well into the foreseeable future, if not indefinitely. Connectivity among the central-Idaho and northwest Montana recovery areas and with wolves in Canada will provide further long-term stability to the NRM DPS. Populations in all of the NRM DPS, except Wyoming, will also be managed for continued genetic exchange with the GYA (Groen *et al.* 2008). If genetic problems ever materialize in any portion of the NRM DPS, which we believe is highly unlikely in the foreseeable future, they will be resolved by agency-managed genetic exchange. While disease and parasites can temporarily impact population stability, as long as populations are managed above recovery levels, these factors are not likely to threaten the wolf population at any point in the foreseeable future. Natural predation is also likely to remain an insignificant factor in population dynamics into the foreseeable future. Finally, we believe that other natural or manmade factors are unlikely to threaten the wolf population within the foreseeable future in all portions of the range with adequate regulatory mechanisms.

A lack of substantial threats to the NRM gray wolf population, except in Wyoming, indicates that this DPS is neither in danger of extinction, nor likely to become endangered within the foreseeable future in any of its range, except in Wyoming. Thus, the NRM DPS does not merit continued listing as threatened or endangered throughout ''all'' of its range. Retention of the Act's protections in any significant portions of the range that where the gray wolf is threatened or endangered ensures all significant portions of the range maintain adequate protection.

Is the Species Threatened or Endangered in a Significant Portion of its Range—Having determined that the NRM DPS of gray wolf does not meet the definition of threatened or endangered in ''all'' of its range, we must next consider whether there are any significant portions of its range that are in danger of extinction or are likely to become endangered in the foreseeable future. On March 16, 2007, a formal opinion was issued by the Solicitor of the Department of the Interior, ''The Meaning of 'In Danger of Extinction Throughout All or a Significant Portion of Its Range''' (U.S. DOI 2007). We have summarized our interpretation of that opinion and the underlying statutory language below. A portion of a species' range is significant if it is part of the current range of the species and is important to the conservation of the species because it contributes meaningfully to the representation, resiliency, or redundancy of the species. The contribution must be at a level such that its loss would result in a decrease in the ability to conserve the species.

The first step in determining whether a species is threatened or endangered in a significant portion of its range is to identify any portions of the range of the species that warrant further consideration. The range of a species can theoretically be divided into portions in an infinite number of ways. However, there is no purpose to analyzing portions of the range that are not reasonably likely to be significant and either threatened or endangered. To identify only those portions that warrant further consideration, we determine whether there is substantial information indicating that (i) the portions may be significant and (ii) the species may be in danger of extinction there or likely to become so within the foreseeable future. In practice, a key part of this analysis is whether the threats are geographically concentrated in some way. If the threats to the species are essentially uniform throughout its range, no portion is likely to warrant further consideration. Moreover, if any concentration of threats applies only to portions of the range that are unimportant to the conservation of the species, such portions will not warrant further consideration.

If we identify any portions that warrant further consideration, we then determine whether in fact the species is threatened or endangered in any significant portion of its range. Depending on the biology of the species, its range, and the threats it faces, it may be more efficient for the Service to address the significance question first, or the status question first. Thus, if the Service determines that a portion of the range is not significant, the Service need not determine whether the species is threatened or endangered there; if the Service determines that the species is not threatened or endangered in a portion of its range, the Service need not determine if that portion is significant.

The terms ''resiliency,'' ''redundancy,'' and ''representation'' are intended to be indicators of the conservation value of portions of the range (Shaffer and Stein 2000). Resiliency of a species allows the species to recover from periodic disturbance. A species will likely be more resilient if large populations exist in high-quality habitat that is distributed throughout the range of the species in such a way as to capture the environmental variability found within the range of the species. It is likely that the larger size of a population will help contribute to the viability of the species overall. Thus, a portion of the range of a species may make a meaningful contribution to the resiliency of the species if the area is relatively large and contains particularly high-quality habitat or if its location or characteristics make it less susceptible to certain threats than other portions of the range. When evaluating whether or how a portion of the range contributes to resiliency of the species, it may help to evaluate the historical value of the portion and how frequently the portion is used by the species. In addition, the portion may contribute to resiliency for other reasons—for instance, it may contain an important concentration of certain types of habitat that are necessary for the species to carry out its life-history functions, such as breeding, feeding, migration, dispersal, or wintering.

Redundancy of populations may be needed to provide a margin of safety for the species to withstand catastrophic events. This does not mean that any portion that provides redundancy is a significant portion of the range of a species. The idea is to conserve enough areas of the range such that random perturbations in the system act on only a few populations. Therefore, each area must be examined based on whether that area provides an increment of redundancy that is important to the conservation of the species.

Adequate representation insures that the species' adaptive capabilities are conserved. Specifically, the portion should be evaluated to see how it contributes to the genetic diversity of the species. The loss of genetically based diversity may substantially reduce the ability of the species to respond and adapt to future environmental changes. A peripheral population may contribute meaningfully to representation if there is evidence that it provides genetic diversity due to

its location on the margin of the species' habitat requirements.

To determine if a portion of the species' range contributes substantially to the resiliency of the species, the Service considered in this instance: (1) To what extent does this portion of the range contribute to the total of large blocks of high-quality habitat; (2) To what extent do the population size and characteristics within this portion of the range contribute to the ability of the species to recover from periodic disturbances; (3) To what extent does this portion of the range act as a refugium of the species; and (4) To what extent does this portion contain an important concentration of habitats necessary for certain life history functions?

To determine if a portion of the species' range contributes substantially to the redundancy of the species, the Service considered in this instance: (5) To what extent does this portion of the range contribute to the total [gross area] range of the species; (6) To what extent does this portion of the range contribute to the total population of the species; (7) To what extent does this portion of the range contribute to the total suitable habitat; and (8) To what extent does this portion of the range contribute to the geographical distribution of the species?

To determine if a portion of the species' range contributes substantially to the representation of the species, the Service considered in this instance: (9) To what extent does this portion of the range contribute to the genetic diversity of the species; (10) To what extent does this portion of the range contribute to the morphological/physiological diversity of the species; (11) To what extent does this portion of the range contribute to the behavioral diversity of the species; and (12) To what extent does this portion of the range contribute to the diversity of ecological settings in which the species is found?

These questions provide for a relative ranking of the level of the portion's contribution to the listable entity's (species, subspecies or DPSs) representation, resiliency, or redundancy. The above questions are tools to identify those factors that are important in considering a portion's contribution to resiliency, redundancy, and representation, and whether it is significant. The Service then reviews the results and the justifications to decide whether the portion contributes substantially to the representation, redundancy and resiliency of the listable entity (species, subspecies or DPS). In general, if the contribution to the representation, resiliency, or redundancy of all or nearly all the questions is low, the portion likely does not contribute substantially to representation, resiliency, or redundancy; if the contribution to the representation, resiliency, or redundancy of most or multiple questions are high, the portion likely contributes substantially to representation, resiliency, or redundancy.

To determine whether the NRM DPS is threatened in any significant portion of its range, we first considered how the concepts of resiliency, representation, and redundancy apply to the conservation of this particular DPS. A number of available documents provide insight into this discussion including: The originally listed entity (39 FR 1171, January 4, 1974; 50 CFR 17.11 in 1975, 1976, 1977), the recovery plans (Service 1980; Service 1987), the 1994 reintroduction EIS (Service 1994), our designation of non-essential, experimental population areas (59 FR 60252, November 22, 1994; 59 FR 60266, November 22, 1994; 50 CFR 17.84 (i) & (n)), our 2001/2002 review of the recovery goals (Bangs 2002), Interagency Annual Reports (Service *et al.* 1989–2008), and numerous professional publications (see Service *et al.* 2007, pp. 213–230; Soule *et al.* 2003, p. 1238; Scott *et al.* 2005, p. 383; Vucetich *et al.* 2006, p. 1383; Carroll *et al.* 2006, pp. 369–371; Waples *et al.* 2007, p. 964).

Based on our 5-factor threats analysis above, we readily identified two areas within the NRM DPS as warranting further consideration to determine if they are significant portions of the range that may be threatened or endangered. These areas include: (1) All portions of Wyoming; and (2) unoccupied portions of Montana and Idaho as well as the portions of Utah, Washington and Oregon within the NRM DPS. For each of these areas we evaluate whether they are significant per the above definition and, if significant, we weigh whether they are threatened or endangered. If any of these areas constitute a significant portion of the range that is threatened or endangered, we then determine the appropriate boundaries where the protections of the Act should remain in place.

Wyoming—We have long considered Wyoming to be critical to the establishment and maintenance of NRM wolf population (39 FR 1171, January 4, 1974; 50 CFR 17.11 in 1975, 1976, 1977; Service 1980; Service 1987; Service *et al.* 1989–2008; Service 1994; 59 FR 60252, November 22, 1994; 59 FR 60266, November 22, 1994; 50 CFR 17.84 (i) & (n); Bangs 2002; Williams 2004; 71 FR 43410, August 1, 2006; Hall 2007). The following analysis considers all of Wyoming with a focus on northwest Wyoming which contains the vast majority of the State's suitable wolf habitat. While our proposed rule indicated we would consider excluding National Parks from the Wyoming significant portion of the range (72 FR 6106, February 8, 2007), we no longer believe this is warranted as it would excessively subdivide the Yellowstone recovery area into units so small as to meaningfully reduce their contribution to the representation, resiliency, or redundancy of the NRM DPS.

Northwest Wyoming meaningfully affects resiliency in that it contains a high percentage of the NRM DPS' large blocks of high quality habitat thereby contributing to the NRM DPS' long-term viability. Similarly, northwest Wyoming contains a population that is essential to the conservation of the NRM population. We view this portion of the NRM population as sufficiently robust to make a high contribution to the ability of the NRM DPS to recovery from periodic disturbance. Northwest Wyoming's National Parks also serve as a refugium protected from certain population events (such as human caused mortality). Northwest Wyoming also contains suitable habitat areas which provide all of the species' life history functions. Collectively, this information indicates that northwest Wyoming would allow the NRM DPS to recover from periodic disturbance and, thus, meaningfully contributes to the resiliency of the NRM DPS.

In terms of redundancy, we considered several factors. First, Wyoming includes approximately 25 percent of the total gross area of the NRM DPS. Second, northwest Wyoming includes approximately 25 percent of the NRM DPS' current population and a third of the minimum population recovery goal. Northwest Wyoming also includes approximately 17 percent of the NRM DPS' total suitable habitat. Finally, northwest Wyoming contains the majority and the core of the Yellowstone recovery area, one of three subpopulations in the NRM DPS. Collectively, this information indicates that northwest Wyoming provides a margin of safety for the species to withstand catastrophic events and, thus, meaningfully contributes to the redundancy of the NRM DPS.

In terms of representation, suitable habitat within northwest Wyoming's National Parks and some surrounding areas contain ecological settings that differ from the ecological setting of most of the rest of NRM DPS. This ecological setting results in some unique or unusual behavior. For example, the

presence of bison in these areas result in the unique, learned, group hunting behavior not required for other prey types. Other studies found that similar local adaptations to specific prey type resulted in genetic differences (Leonard *et al.* 2005). Collectively, this information indicates that northwest Wyoming's National Parks and some surrounding areas could play a role in conserving the species' adaptive capabilities and, thus, contributes to the representation of the NRM DPS.

We have determined that northwest Wyoming meaningfully contributes to NRM DPS' resiliency, redundancy, and representation at a level such that its loss would result in a decrease in the ability to conserve the NRM DPS. Thus, this portion of the range constitutes a significant portion of the NRM DPS' range as described in the Act.

If we identify any portion as significant, we then determine whether in fact the species is threatened or endangered in this significant portion of its range. Within this portion of the range, managing human-caused mortality remains the primary challenge to maintaining a recovered wolf population in the foreseeable future. If Wyoming's wolf population is managed above recovery levels, the species' biology (specifically its reproductive capacity) and the availability of a large, secure block of suitable habitat will maintain a strong source population capable of withstanding all other foreseeable threats. Unfortunately, Wyoming's current regulatory framework does not provide the adequate regulatory mechanisms to assure that Wyoming's share of a recovered NRM wolf population would be conserved if the protections of the Act were removed.

In 2004, we determined that problems with the 2003 Wyoming legislation and plan, and inconsistencies between the law and management plan did not allow us to approve Wyoming's approach to wolf management (Williams 2004). On August 1, 2006, we published a 12-month finding describing the reasons why the 2003 Wyoming State law and wolf management plan did not provide the necessary regulatory mechanisms to assure maintenance of Wyoming's numerical and distributional share of a recovered NRM wolf population (71 FR 43410). In 2007, the Wyoming legislature amended State law to address our concerns. Following the change in State law, the WGFC approved a revised wolf management plan (Cleveland 2007). This plan was then approved by the Service as providing adequate regulatory protections to conserve Wyoming's portion of a recovered NRM DPS into the foreseeable future (Hall 2007). Following the July 18, 2008, U.S. District Court for the District of Montana's preliminary injunction order, we reconsidered this approval.

In its preliminary injunction order, the U.S. District Court stated that we acted arbitrarily in delisting a wolf population that lacked evidence of genetic exchange between subpopulations. We believe Wyoming's current regulatory framework for delisted wolves would further reduce the likelihood of natural genetic connectivity as wolves are unlikely to successfully traverse the 88 percent of Wyoming where wolves are considered predatory animals.

The court also stated that we acted arbitrarily and capriciously when we approved Wyoming's 2007 statute which allows the WGFC to diminish the trophy game area (which State law restricts to no more than 12 percent of Wyoming) if it ''determines the diminution does not impede the delisting of gray wolves and will facilitate Wyoming's management of wolves.'' Because wolves are unlikely to survive where they are classified as predatory animals, potential expansion of the predatory animal area would further limit occupancy in Wyoming and opportunities for natural connectivity.

Furthermore, the court stated that we acted arbitrarily and capriciously when we approved Wyoming's 2007 statute and wolf management plan because it determined that the State failed to commit to managing for at least 15 breeding pairs. Specifically, the court stated that Wyoming State law intends to rely on the National Park Services' ability to maintain 8 breeding pairs of wolves to satisfy Wyoming's obligation to preserve at least 15 breeding pairs as its share of the required wolf population. We have long maintained that Wyoming, Montana, and Idaho must each manage for at least 15 breeding pairs and at least 150 wolves in mid-winter to ensure the population never falls below the minimum recovery goal of 10 breeding pairs and 100 wolves per State.

Finally, the court raised concerns with Wyoming's depredation control law that it viewed as significantly more expansive than existing nonessential, experimental regulations (59 FR 60252, November 22, 1994; 59 FR 60266, November 22, 1994; 70 FR 1286, January 6, 2005; 73 FR 4720, January 28, 2008; 50 CFR 17.84(i) & (n)).

As outlined in detail in Factor D above, we have determined Wyoming's existing regulatory framework does not provide the necessary regulatory mechanisms to assure that Wyoming's share of a recovered NRM wolf population would be conserved if the protections of the Act were removed. Revision of Wyoming's wolf management law, plan, and regulation are necessary to ensure the long-term conservation of Wyoming's share of a recovered NRM wolf population (Gould 2009). These revisions need to provide the foundation for necessary changes to the Wyoming gray wolf management plan and associated regulations. Until Wyoming revises their statutes, management plan, and associated regulations, and obtains Service approval, wolves in Wyoming shall remain protected by Act.

We may consider many factors in determining the boundaries of the significant portion of its range where the DPS remains listed including whether there is a biological basis for boundaries (e.g., population groupings, genetic differences, or differences in ecological setting) or if differences in threat management result in biological differences in status (e.g., International or State boundaries where the threats might be different on either side of the boundary). Significant portion of range boundaries may consist of geographical features, constructed features (e.g., roads), or administrative boundaries.

The boundaries used to legally define the extent of a significant portion of range are identified following these general principles: (1) Boundaries enclose and define the area where threats are sufficient to result in a determination that a portion of a DPS' range is significant, and is endangered or threatened; (2) Boundaries clearly define the portion of the range that is specified as threatened or endangered, and may consist of geographical or administrative features or a combination of both; and (3) Boundaries do not circumscribe the current distribution of the species so tightly that opportunities for recovery are foreclosed.

The scale of the boundaries is determined case-by-case to be appropriate to the size of the portion of the listed entities' range, and the availability of unambiguous geographic or administrative boundaries. The scale at which one defines the range of a particular species is fact and context dependant. In other words, whether one defines the range at a relatively course or fine scale depends on the life history of the species at issue, the data available, and the purpose for which one is considering range.

Our proposed rule (72 FR 6106, February 8, 2007) indicated that we found the only ''significant'' portion of

Wyoming was the 12 percent of the State in northwestern Wyoming managed as a trophy game area (W.S. 11–6–302 *et seq.* and 23–1–101, *et seq.* in House Bill 0213). In its July 18, 2008, preliminary injunction order, the U.S. District Court for the District of Montana referred to this area ''small'' and questioned why we had reversed our position that Wyoming should designate wolves as trophy game statewide. Furthermore, the court expressed concern over the lack of genetic connectivity between wolves in Wyoming and wolves in the rest of the NRM DPS.

Our position on both Wyoming's 2003 and 2007 regulatory framework was based on the ability of the regulatory mechanisms to maintain the State's share of a recovered wolf population. In 2004, we recommended changes to Wyoming's 2003 State law and wolf management plan because the trophy game area (limited to northwest Wyoming's National Parks and wilderness areas) was not sufficient to assure the Service that the wolf population would remain above recovery levels. In our 2004 letter, we recommended statewide trophy game status. In 2007, Wyoming substantially expanded their trophy game area. While far short of our stated desire for a statewide trophy game area, we concluded the expanded area, which included 70 percent of the State's suitable wolf habitat, was large enough to support Wyoming's share of the minimum number of breeding pairs necessary for recovered wolf population.

Following the release of the July 18, 2008, Montana District Court preliminary injunction order, we reevaluated the adequacy of Wyoming's regulatory framework including the size of the trophy game area. We now believe all of Wyoming should be managed as a trophy game area. The record demonstrates that wolves are unlikely to survive where they are classified as predatory animals. Thus, the current regulatory framework is problematic for the reasons outlined below.

First, the current regulatory framework limits natural genetic connectivity. The GYA is the most isolated core recovery area within the NRM DPS (Oakleaf *et al.* 2005, p. 554; vonHoldt *et al.* 2007, p. 19). Wolf dispersal patterns indicate that dispersing wolves moving into the GYA from Idaho or Montana are likely to move through the predatory area (Boyd *et al.* 1995). Physical barriers (such as high-elevation mountain ranges that are difficult to traverse in winter) appear to discourage dispersal through the National Parks' northern and western boundaries. Limited social openings in the National Parks' wolf packs also direct dispersing wolves from Idaho and Montana toward the predatory area portions of Wyoming. Finally, Wyoming's winter elk feeding grounds attract and could potentially hold dispersing wolves in the predatory area. Thus, we believe dispersal is more likely to lead to genetic exchange if dispersers have safe passage through the predatory area. While natural connectivity is not and has never been required to achieve our recovery goal, we believe it should be encouraged so as to minimize the need for agency-managed genetic exchange. Because exact migratory corridors are not known, WGFD should be given regulatory authority over the entire State to adaptively manage this issue as new information comes to light over time.

A statewide trophy game area is also advisable given the dispersal capabilities of wolves. Wolves have large home ranges (518 to 1,295 km^2 (200 to 500 mi^2)) with average long-distance dispersal events of 97 km (60 mi) (Boyd and Pletscher 1997, p. 1094; Boyd *et al.* 2007; Thiessen 2007, p. 33), unusually long-distance dispersal events of 290 km (180 mi) (Jimenez *et al.* 2008d, Figures 2 and 3), and dispersal potential of over 1,092 km (680 mi). Some of these wolves may disperse and return to the core of suitable habitat. A statewide trophy game status will allow for routine and unusual dispersal events without near certain mortality (although pack establishment in areas of unsuitable habitat is extremely unlikely).

Furthermore, statewide trophy game status will allow more flexibility to devise a management strategy, including regulated harvest that provides for self-sustaining populations above recovery goals. For example, having management authority over the entire State could allow for strategic use of all suitable habitat if necessary during years of disease outbreak. Such an approach could also allow managers to strategically shift wolf distribution and densities in response to localized impacts to native ungulate herds and livestock.

Additionally, we believe statewide trophy game status prevents a patchwork of different management statuses; will be easier for the public to understand and, thus, will be easier to regulate; is similar to State management of other resources like mountain lions and blackbears; and is consistent with the current regulatory scheme in that the entire State is currently nonessential, experimental. Finally, maintenance of the Act's protections Statewide will assist Service Law Enforcement efforts that might otherwise be difficult if predatory animal status was allowed in portions of Wyoming.

We believe the entire State of Wyoming should be managed as a trophy game area. Continuation of the current regulatory framework in Wyoming would meaningfully affect the DPS's resiliency, redundancy, and representation, and decrease the ability to conserve the species. For the purposes of this rule, the entire State shall be considered a significant portion of the range with the understanding that different portions of the range contribute different biological benefits. This boundary: Encompasses the area where threats are sufficient to result in a determination that a portion of a DPS' range is significant, and is endangered or threatened; clearly defines the portion of the range that is specified as threatened or endangered; and does not circumscribe the current distribution of the species so tightly that opportunities to maintain recovery are foreclosed. Retaining the Act's protections Statewide also is inclusive of the area where a lack of threat management results in biological differences in status (i.e., it covers the State's entire predatory animal area). By identifying the entire State as a significant portion of the range we are not suggesting wolves could or should reoccupy or establish packs in unsuitable habitat.

Unoccupied portions of Montana and Idaho as well as the portions of Utah, Washington and Oregon within the NRM DPS—Finally, we decided to analyze the remaining portions of the NRM DPS in our significant portion of range analysis out of an abundance of caution and based on the controversy concerning the status of the wolf in this area. Specifically, we considered: The portion of Montana east of I–15 and north of I–90; the portion of Idaho south of I–84; and the portions of Oregon, Washington, and Utah within the NRM DPS. These boundaries are based largely upon our understanding of suitable habitat and the location of easily identifiable and understandable manmade markers and boundaries. The following provides our analysis of whether these portions of the range are significant.

This portion of the range does not meaningfully contribute to the resiliency, redundancy, and representation of the NRM DPS. In terms of resiliency, the area: Does not contain any large blocks of high-quality habitat; does not contain, nor is it capable of containing, a population

substantial enough to contribute to the ability of the NRM DPS to recover from periodic disturbance; does not act, nor is it capable of acting, as a refugium for the NRM DPS; and does not contain an important concentration of habitats necessary to carry out life-history functions (a possible exception is the ability to traverse these areas which may play a role in the conservation of the species). In terms of redundancy, the area: Makes a moderate contribution to the total range of the NRM DPS; does not contribute, nor is it capable of contributing, meaningfully to the total population of the NRM DPS; contains only about 8 percent of theoretical suitable wolf habitat (as described by Oakleaf *et al.* 2005, p. 561); and is not capable of contributing largely to the geographic representation of the species. In terms of representation, the area: Is unlikely to have wolves that are genetically, morphologically or physiologically unique; is unlikely to have wolves that exhibit behavior indicative of local adaptations that contributes to the overall diversity of the NRM DPS; and does not represent a unique ecological setting. With only a minor contribution the resiliency, redundancy, and representation of the NRM DPS, we determine these areas are not a significant portion of range in the NRM DPS.

Most of these areas have been so modified by humans that they are no longer able to support viable wolf populations or persistent breeding pairs. To the extant that any of these areas contain suitable habitat, they are small, fragmented areas where wolf packs are unlikely to persist. Only a few wolves have established themselves in these areas. Most of these have eventually become problem wolves requiring control. This lack of suitability is why wolf recovery was never envisioned for these areas (Service 1987; Service 1994).

To the extant that the ability to traverse these areas may play a role in the conservation of the species, all wolves in these areas will be regulated by the States as a game species. Violation of game rules will be subject to prosecution. We believe this is an appropriate level of protection for these largely unsuitable habitats and the same level of protection recommended for southern and eastern Wyoming.

We have determined that these areas are insignificant to maintaining the NRM wolf population's viability as they make only minor contributions to the species' representation, resiliency, or redundancy. These contributions are not at a level that meaningfully impacts the ability to conserve the species. To the extant that the ability to traverse these areas may play a role in the conservation of the species, they will be appropriately regulated.

In conclusion, based on the best scientific and commercial data available, we recognize a DPS of the gray wolf (*C. lupus*) in the NRM. The NRM gray wolf DPS encompasses the eastern one-third of Washington and Oregon, a small part of north-central Utah, and all of Montana, Idaho, and Wyoming. Recent estimates indicate the NRM DPS contains approximately 5 times more wolves than the minimum population recovery goal requires and about 3 times more wolves than the breeding pair recovery goal requires. The end of 2008 will mark the ninth consecutive year the population has exceeded our numeric and distributional recovery goals. The States of Montana and Idaho have adopted State laws, management plans, and regulations that meet the requirements of the Act and will conserve a recovered wolf population into the foreseeable future. However, wolf populations in Wyoming continue to face high magnitude of threats that would materialize imminently in the absence of the Act's protections because of a lack of effective regulatory mechanisms in the State. We determine that the best scientific and commercial data available demonstrates that (1) the NRM DPS is not threatened or endangered throughout ''all'' of its range (i.e., not threatened or endangered throughout all of the DPS); and (2) the Wyoming portion of the range represents a significant portion of range where the species remains in danger of extinction because of inadequate regulatory mechanisms. Thus, this final rule removes the Act's protections throughout the NRM DPS except for Wyoming. Wolves in Wyoming will continue to be regulated as a non-essential, experimental population per 50 CFR 17.84 (i) and (n).

Effects of the Rule

Promulgation of this final rule will affect the protections afforded to the NRM gray wolf population under the Act, except for the significant portion of the range (SPR) in Wyoming. Taking, interstate commerce, import, and export of these wolves are no longer prohibited under the Act, except for the SPR in Wyoming. Other State and Federal laws will still regulate take. In addition, with the removal of the Act's protection in most of the NRM DPS, Federal agencies are no longer required to consult with us under section 7 of the Act to ensure that any action authorized, funded, or carried out by them is not likely to jeopardize the species' continued existence, except for the SPR in Wyoming. No critical habitat has been designated for the NRM DPS: Thus, 50 CFR 17.95 is not modified by this regulation. Removing the Act's protections in most of the NRM DPS is expected to have positive effects in terms of management flexibility to the State, Tribal, and local governments.

Because the SPR in Wyoming shall remain protected under the Act, this regulation leaves in place the nonessential experimental regulations in Wyoming designed to reduce the regulatory burden. Until Wyoming revises their statute, regulations, and management plan, and it is again Service approved, most wolves in Wyoming will continue be regulated by the 1994 experimental rule (59 FR 60252, November 22, 1994; 50 CFR 17.84(i)). Wolves on Wind River Tribal lands will be regulated by the 2005 and 2008 experimental rule (70 FR 1286, January 6, 2005; 73 FR 4720, January 28, 2008; 50 CFR 17.84(n)) because the Tribe has a Service approved post-delisting wolf management plan.

Elsewhere in today's **Federal Register**, we also identify the Western Great Lakes (WGL) DPS and removed the gray wolves in that DPS from the List of Endangered and Threatened Wildlife. As the Service is taking these regulatory actions with respect to the NRM DPS and WGL DPS at the same time, this final rule includes regulatory revisions under § 17.11(h) that reflect the removal of the protections of the Act for both the WGL DPS and most of the NRM DPS, and reflect that gray wolves in Wyoming, an SPR of the NRM DPS range, continue to be listed as an experimental population. However, only that portion of the revised gray wolf listing in § 17.11(h) that pertains to the NRM DPS is attributable to this final rule.

The separate experimental population listing in portions of Arizona, New Mexico, and Texas continues unchanged.

Once this rule goes into effect, if a NRM wolf goes beyond the NRM DPS boundary, it attains the listing status of the area it has entered.

Post-Delisting Monitoring

Section 4(g)(1) of the Act, 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 is to verify that a recovered species remains secure

from risk of extinction after it no longer has the protections of the Act. Should relisting be required, we may make use of the emergency listing authorities under section 4(b)(7) of the Act to prevent a significant risk to the well-being of any recovered species.

Monitoring Techniques—The NRM area was intensively monitored for wolves even before wolves were documented in Montana in the mid-1980s (Weaver 1978; Ream and Mattson 1982, p. 379–381; Kaminski and Hansen 1984, p. v). Numerous Federal, State, and 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.

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 (e.g., a wolf reported feeding on a livestock carcass). Lone wolves can wander long distances over a short period of time (Mech and Boitani 2003, pp. 14–15) and may be almost impossible to find again or 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 the normal course of their 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 and radio-collar the wolves. 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 number and location 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 level of wildlife monitoring is intensive and the results are relatively accurate estimates of wolf population distribution and structure (Service *et al.* 2009, Table 1–4, Figure 1–4). This monitoring strategy has been used to estimate the NRM wolf population for over 20 years.

Montana and Idaho, as well as Washington, Oregon and Utah, committed to continue monitoring wolf populations, according to their State wolf management plans (See State plans in Factor D) or in other cooperative agreements, using similar techniques as the Service and its cooperators (which has included the States, Tribes, and USDA–WS—the same agencies that will be managing and monitoring wolves post-delisting) have used. Montana and Idaho have committed to continue to conduct wolf population monitoring through the post-delisting monitoring period (Montana 2003, p. 63, 78; Idaho 2002, p. 35). Montana and Idaho also have committed to publish the results of their monitoring efforts in annual wolf reports as has been done since 1989 by the Service and its cooperators (Service *et al.* 1989–2009). The Service and the National Park Service will continue to monitor wolves in Wyoming. 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 State and coordinate those observations with other States. The annual reports also have documented all aspects of the wolf management program including staffing and funding, legal issues, population monitoring, control to reduce livestock and pet damage, research (predator-prey interactions, livestock/wolf conflict prevention, disease and health monitoring, publications, etc.) and public outreach.

Service Review of the Post-Delisting Status of the Wolf Population—To ascertain wolf population distribution and structure and to analyze if the wolf population might require a Service-led status review (to determine whether it should again be listed under the Act), we intend to review the State and any Tribal annual wolf reports for at least 5 years after delisting. The status of the NRM wolf population will be estimated by estimating the numbers of packs, breeding pairs, and total numbers of wolves in mid-winter by State and by recovery area throughout the post-delisting monitoring period (Service *et al.* 2009, Table 4, Figure 1). By evaluating the techniques used and the results of those wolf monitoring efforts, the Service can decide whether further action, including relisting is warranted. In addition, the States and Tribes are investigating other, perhaps more accurate and less expensive, ways to help estimate and describe wolf pack distribution and abundance (Service *et al.* 2009, Figure 1, Table 4; Kunkel *et al.* 2005; Mitchell *et al.* 2008).

Other survey methods and data can become the 'biological equivalents' of the breeding pair definition currently used to measure recovery (Mitchell *et al.* 2008). 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 (Mitchell *et al.* 2008). Although not compelled by the Act, the State will likely continue to publish their annual wolf population estimates, in cooperation with National Parks and Tribes, after the mandatory wolf population monitoring required by the Act is over because of mandatory reporting requirements in Federal funding and grant programs and the high local and national public and scientific interest in NRM wolves.

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 State 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, abundance, and threats in the NRM DPS. For the post-delisting monitoring period, the best source of that information will be the State's annual or other wolf reports and publications. 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 DPS on our website (*http://westerngraywolf.fws.gov/*) by approximately April 1 of each following year. During our annual analysis of the State's annual reports (which will continue for at least 5 years), 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, habitat, diseases, decreases in prey abundance, increases in wolf-livestock conflict, or other natural and man-caused factors.

Our analysis and response for post-delisting monitoring is to track changes in wolf abundance, distribution, and threats to the population. Three scenarios could lead us to initiate a status review and analysis of threats to determine if relisting was warranted including: (1) If the wolf population falls below the minimum NRM wolf population recovery level of 10 breeding pairs of wolves and 100 wolves in either Montana or Idaho at the end of the year; (2) if the wolf population segment in Montana or Idaho falls below 15 breeding pairs or 150 wolves at the end of the year in any one of those States for 3 consecutive years; or (3) if a change in State law or management objectives would significantly increase the threat to the wolf population. All such reviews would be made available for public review and comment, including peer review by select species experts. Additionally, if any of these scenarios occurred during the mandatory 5-year post-delisting monitoring period, the post-delisting monitoring period would be extended 5 additional years from that point in that State.

Regulatory Planning and Review (Executive Order 12866)

The Office of Management and Budget (OMB) has determined that this rule is not significant and has not reviewed this rule under Executive Order 12866 (E.O. 12866). OMB bases its determination upon the following four criteria: (a) Whether the rule will have an annual effect of $100 million or more on the economy or adversely affect an economic sector, productivity, jobs, the environment, or other units of the government; (b) Whether the rule will create inconsistencies with other Federal agencies' actions; (c) Whether the rule will materially affect entitlements, grants, user fees, loan programs, or the rights and obligations of their recipients; (d) Whether the rule raises novel legal or policy issues.

Paperwork Reduction Act

OMB regulations at 5 CFR 1320 implement provisions of the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*). The OMB regulations at 5 CFR 1320.3(c) define a collection of information as the obtaining of information by or for an agency by means of identical questions posed to, or identical reporting, recordkeeping, or disclosure requirements imposed on, 10 or more persons. Furthermore, 5 CFR 1320.3(c)(4) specifies that ''ten or more persons'' refers to the persons to whom a collection of information is addressed by the agency within any 12-month period. For purposes of this definition, employees of the Federal government are not included. The Service may not conduct or sponsor, and you are not required to respond to, a collection of information unless it displays a currently valid OMB control number.

This rule does not contain any collections of information that require approval by OMB under the Paperwork Reduction Act. As proposed under the Post-Delisting Monitoring section above, populations will be monitored by the States and Tribes in accordance with their Wolf Management Plans. We do not anticipate a need to request data or other information from 10 or more persons during any 12-month period to satisfy monitoring information needs. If it becomes necessary to collect information from 10 or more non-Federal individuals, groups, or organizations per year, we will first obtain information collection approval from OMB.

National Environmental Policy Act

The Service has determined that Environmental Assessments and EIS, as defined under the authority of the NEPA, need not be prepared in connection with actions adopted pursuant to section 4(a) of the Act. A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

Executive Order 13211

On May 18, 2001, the President issued Executive Order 13211 on regulations that significantly affect energy supply, distribution, and use. Executive Order 13211 requires agencies to prepare Statements of Energy Effects when undertaking certain actions. As this final rule is not expected to significantly affect energy supplies, distribution, or use, this action is not a significant energy action and no Statement of Energy Effects is required.

Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994, Government-to-Government Relations with Native American Tribal Governments (59 FR 22951), Executive Order 13175, and 512 DM 2, we have coordinated the proposed rule and this final rule with the affected Tribes. Throughout several years of development of earlier related rules and the proposed rule, we have endeavored to consult with Native American tribes and Native American organizations in order to both (1) provide them with a complete understanding of the proposed changes, and (2) to understand their concerns with those changes. We have fully considered their comments during the development of this final rule. If requested, we will conduct additional consultations with Native American tribes and multi-tribal organizations subsequent to this final rule in order to facilitate the transition to State and tribal management of gray wolves within the NRM DPS.

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).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

■ Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

■ 1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500; unless otherwise noted.

■ 2. In § 17.11(h), the entry for ''Wolf, gray'' under MAMMALS in the List of Endangered and Threatened Wildlife is revised to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
MAMMALS							
*	*	*	*	*	*	*	
Wolf, gray	*Canis lupus*	Holarctic	U.S.A., conterminous (lower 48) States, except: (1) Where listed as an experimental population below; (2) Minnesota, Wisconsin, Michigan, eastern North Dakota (that portion north and east of the Missouri River upstream to Lake Sakakawea and east of the centerline of Highway 83 from Lake Sakakawea to the Canadian border), eastern South Dakota (that portion north and east of the Missouri River), northern Iowa, northern Illinois, and northern Indiana (those portions of IA, IL, and IN north of the centerline of Interstate Highway 80), and northwestern Ohio (that portion north of the centerline of Interstate Highway 80 and west of the Maumee River at Toledo); (3) MT, ID, WY (however, *see* experimental population designation below), eastern WA (that portion of WA east of the centerline of Highway 97 and Highway 17 north of Mesa and that portion of WA east of the centerline of Highway 395 south of Mesa), eastern OR (portion of OR east of the centerline of Highway 395 and Highway 78 north of Burns Junction and that portion of OR east of the centerline of Highway 95 south of Burns Junction), and north central UT (that portion of UT east of the centerline of Highway 84 and north of Highway 80). Mexico.	E	1, 6, 13, 15, 35	N/A	N/A
.....do	.....do	.....do	U.S.A. (portions of AZ, NM, and TX—see § 17.84(k)).	XN	631	N/A	17.84(k)
Wolf, gray [Northern Rocky Mountain DPS].	*Canis lupus*	U.S.A. (MT, ID, WY, eastern WA, eastern OR, and north central UT).	U.S.A. (WY—see § 17.84(i) and § 17.84(n)).	XN	561, 562	N/A	17.84(i). 17.84(n).
*	*	*	*	*	*	*	

■ 3. Amend § 17.84 by:
■ a. Revising paragraphs (i)(7)(i) and (ii) and removing paragraph (i)(7)(iii);
■ b. Revising the first sentence of paragraph (n)(1); and
■ c. Revising paragraphs (n)(9)(i) and (ii) and removing paragraph (n)(9)(iii).

The revisions read as follows:

§ 17.84 Special rules—vertebrates.

* * * * *

(i) * * *

(7) * * *

(i) The nonessential experimental population area includes all of Wyoming.

(ii) All wolves found in the wild within the boundaries of this paragraph (i)(7) will be considered nonessential experimental animals. In the conterminous United States, a wolf that is outside an experimental area (as defined in paragraph (i)(7) of this section) would take on the status for wolves in the area in which it is found unless it is marked or otherwise known to be an experimental animal; such a wolf may be captured for examination and genetic testing by the Service or Service-designated agency. Disposition of the captured animal may take any of the following courses:

(A) If the animal was not involved in conflicts with humans and is determined likely to be an experimental wolf, it may be returned to the reintroduction area.

(B) If the animal is determined likely to be an experimental wolf and was involved in conflicts with humans as identified in the management plan for the closest experimental area, it may be relocated, placed in captivity, or killed.

(C) If the animal is determined not likely to be an experimental animal, it will be managed according to any Service-approved plans for that area or will be marked and released near its point of capture.

(D) If the animal is determined not to be a wild gray wolf or if the Service or agencies designated by the Service determine the animal shows physical or behavioral evidence of hybridization with other canids, such as domestic dogs or coyotes, or of being an animal raised in captivity, it may be returned to captivity or killed.

* * * * *

(n) * * *

(1) The gray wolves (wolf) identified in paragraph (n)(9)(i) of this section are a nonessential experimental population. * * *

* * * * *

(9) * * *

(i) The nonessential experimental population area includes all of Wyoming.

(ii) All wolves found in the wild within the boundaries of this experimental area are considered nonessential experimental animals.

* * * * *

Dated: March 10, 2009.

Rowan W. Gould,

Acting Director, U.S. Fish and Wildlife Service.

[FR Doc. E9–5991 Filed 4–1–09; 8:45 am]

BILLING CODE 4310–55–P