DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[FWS–R3–ES–2008–0120; 92220–1113–000; ABC Code: C6]

RIN 1018–AW41

Endangered and Threatened Wildlife and Plants; Final Rule To Identify the Western Great Lakes Populations of Gray Wolves 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: We, the U.S. Fish and Wildlife Service (Service or USFWS) identify the Western Great Lakes (WGL) Distinct Population Segment (DPS) of the gray wolf (*Canis lupus*). The geographic extent of this DPS includes all of Minnesota, Wisconsin, and Michigan; the eastern half of North Dakota and South Dakota; the northern half of Iowa; the northern portions of Illinois and Indiana; and the northwestern portion of Ohio. We also revise the List of Endangered and Threatened Wildlife established under the Endangered Species Act of 1973, as amended (Act) by removing gray wolves within the WGL DPS. We are taking these actions because available data indicate that this DPS no longer meets the definitions of threatened or endangered under the Act. The threats have been reduced or eliminated, as evidenced by a population that is stable or increasing in Minnesota, Wisconsin, and Michigan, and greatly exceeds the numerical recovery criteria established in its recovery plan. Completed State wolf management plans will provide adequate protection and management of the WGL DPS after this revision of the listing. This final rule removes this DPS from the lists of Threatened and Endangered Wildlife, removes the currently designated critical habitat for the gray wolf in Minnesota and Michigan, and removes the current special regulations for gray wolves in Minnesota.

On April 16, 2007, three parties filed a lawsuit against the U.S. Department of the Interior (Department) and the Service, challenging the Service's February 8, 2007 (72 FR 6052), identification and delisting of the WGL DPS. On September 29, 2008, the U.S. District Court for the District of Columbia ruled in favor of the plaintiffs (*Humane Society of the United States* v. *Kempthorne,* No. 1:07–CV–00677 (D.D.C.). In that ruling the court vacated and remanded the Service's application of the February 8, 2007 (72 FR 6052), final delisting rule for the WGL DPS of the gray wolf. On remand, the Service was directed to provide an explanation as to how simultaneously identifying and delisting a DPS is consistent with the Act's text, structure, policy objectives, legislative history, and any relevant judicial interpretations. This final rule addresses the September 29, 2008, court ruling.

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

ADDRESSES: The complete file for this rule is available for inspection, by appointment, during normal business hours at our Midwest Regional Office: U.S. Fish and Wildlife Service, Federal Building, 1 Federal Drive, Ft. Snelling, Minnesota 55111–4056. Call 612–713–5350 to make arrangements. The comments and materials we received during the comment period on the proposed rule also are available for public inspection and by appointment during normal business hours at this Regional Office and at our Ecological Services Field Offices in Bloomington, Minnesota (612–725–3548); New Frankin, Wisconsin (920–866–1717); and East Lansing, Michigan (517–351–2555). Call those offices to make arrangements.

FOR FURTHER INFORMATION CONTACT: Laura Ragan, 612–713–5350. Direct all questions or requests for additional information to: GRAY WOLF QUESTIONS, U.S. Fish and Wildlife Service, Federal Building, 1 Federal Drive, Ft. Snelling, Minnesota 55111–4056. Additional information is also available on our World Wide Web site at *http://www.fws.gov/midwest/wolf.* 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

Biology and Ecology of Gray Wolves

For a discussion of the biology and ecology of gray wolves and general recovery planning efforts, see the proposed WGL wolf rule published on March 27, 2006, (71 FR 15266–15305) and available on our World Wide Web site.

Recovery Criteria

The 1978 Recovery Plan for the Eastern Timber Wolf (Recovery Plan) and the 1992 revised Recovery Plan (Revised Plan) contain the same two delisting criteria. The first delisting criterion states that the survival of the wolf in Minnesota must be assured. We, and the Eastern Timber Wolf Recovery Team (Peterson in litt. 1997, 1998, 1999a, 1999b), have concluded that this first delisting criterion remains valid. It addresses a need for reasonable assurances that future State, Tribal, and Federal wolf management and protection will maintain a viable recovered population of gray wolves within the borders of Minnesota for the foreseeable future.

Although the Recovery Plan's recovery criteria predate the scientific field of conservation biology, the conservation principles of representation (conserving the genetic diversity of a taxon), resilience (the ability to withstand demographic and environmental variation), and redundancy (sufficient populations to provide a margin of safety) were incorporated into these criteria. Maintenance of the Minnesota wolf population is vital because the remaining genetic diversity of gray wolves in the eastern United States was carried by the several hundred wolves that survived in the State into the early 1970s. The Recovery Team insisted that the remnant Minnesota wolf population be maintained and protected to achieve wolf recovery in the eastern United States. The successful growth of that remnant population has maintained and maximized the representation of that genetic diversity among gray wolves in the WGL DPS. Furthermore, the Recovery Plan established a planning goal of 1,250–1,400 animals for the Minnesota wolf population (USFWS 1992, p. 28), which would increase the likelihood of maintaining its genetic diversity over the long term. This large Minnesota wolf population also provides resiliency to reduce the adverse impacts of unpredictable demographic and environmental events. Furthermore, the Recovery Plan specifies a wolf population that is spread across about 40 percent of the State (Zones 1 through 4) (USFWS 1992, p. 28), adding a geographic component to the resiliency of the Minnesota wolf population.

The second delisting criterion in the Recovery Plan states that at least one viable wolf population should be reestablished within the historical range of the eastern timber wolf outside of Minnesota and Isle Royale, Michigan. The second population enhances both the resiliency and redundancy of the recovery program. The Recovery Plan provides two options for reestablishing this second population. If it is an isolated population, that is, located

more than 100 miles (160 km) from the Minnesota wolf population, the second population should consist of at least 200 wolves for at least 5 years (based upon late-winter population estimates) to be considered viable. Alternatively, if the second population is located within 100 miles (160 km) of a self-sustaining wolf population (for example, the Minnesota wolf population), it would be considered viable if it maintained a minimum of 100 wolves for at least 5 years. Such a nearby second population would be viable at a smaller size, because it would exchange wolves with the Minnesota population (that is, they would function as a metapopulation), thereby bolstering the smaller second population genetically and numerically.

The Recovery Plan does not specify where in the eastern United States the second population should be reestablished. Therefore, the second population could be located anywhere within the triangular Minnesota–Maine–Florida area covered by the 1978 Recovery Plan and the 1992 Revised Recovery Plan, except on Isle Royale (Michigan) or within Minnesota. The 1992 Revised Recovery Plan retained potential gray wolf re-establishment areas in northern Wisconsin, the upper peninsula (UP) of Michigan, the Adirondack Forest Preserve of New York, a small area in eastern Maine, and a larger area of northwestern Maine and adjacent northern New Hampshire (USFWS 1992, pp. 56–58). Neither the 1978 nor the 1992 recovery criteria suggest that the restoration of the gray wolf throughout all or most of its historical range in the eastern United States, or to all of these potential re-establishment areas, is necessary to achieve recovery under the Act.

In 1998, the Eastern Timber Wolf Recovery Team clarified the application of the delisting criterion for the second population to the wolf population that had developed in northern Wisconsin and the adjacent UP. The Recovery Team recommended that the numerical delisting criterion for the Wisconsin–Michigan population will be achieved when 6 consecutive late-winter wolf surveys document that the population equals or exceeds 100 wolves (excluding Isle Royale wolves) for the 5 consecutive years between the 6 surveys (Peterson in litt. 1998). This second population is less than 200 miles from the Minnesota wolf population.

Recovery of the Gray Wolf in the Western Great Lakes Area

Minnesota Recovery

During the pre-1965 period of wolf bounties and legal public trapping, wolves persisted in the remote northeastern portion of Minnesota, but were eliminated from the rest of the State. Estimated numbers of Minnesota wolves before their listing under the Act in 1974 include 450 to 700 in 1950–53 (Fuller *et al.* 1992, p. 43, based on data in Stenlund 1955, p. 19), 350 to 700 in 1963 (Cahalane 1964, p. 10), 750 in 1970 (Leirfallom 1970, p. 11), 736 to 950 in 1971–72 (Fuller *et al.* 1992, p. 44), and 500 to 1,000 in 1973 (Mech and Rausch 1975, p 85). Although these estimates were based upon different methodologies and are not directly comparable, each puts the pre-listing abundance of wolves in Minnesota at 1,000 or less. This was the only significant wolf population in the United States outside Alaska during those time-periods.

After the wolf was listed as endangered under the Act, the Minnesota population estimates increased (see Table 1 below). Mech estimated the population to be 1,000 to 1,200 in 1976 (USFWS 1978, pp. 4, 50–52), and Berg and Kuehn (1982, p. 11) estimated that there were 1,235 wolves in 138 packs in the winter of 1978–79. In 1988–89, the Minnesota Department of Natural Resources (MN DNR) repeated the 1978–79 survey and also used a second method to estimate wolf numbers in the State. The resulting independent estimates were 1,500 and 1,750 wolves in at least 233 packs; the lower number was derived by a method comparable to the 1978–79 survey (Fuller *et al.* 1992, pp. 50–51).

During the winter of 1997–98, a statewide wolf population and distribution survey was repeated by MN DNR, using methods similar to those of the two previous surveys. Field staff of Federal, State, Tribal, and county land management agencies and wood products companies were queried to identify occupied wolf range in Minnesota. Data from 5 concurrent radio telemetry studies tracking 36 packs, representative of the entire Minnesota wolf range, were used to determine average pack size and territory area. Those figures were then used to calculate a statewide estimate of wolf and pack numbers in the occupied range, with single (non-pack) wolves factored into the estimate (Berg and Benson 1999, pp. 1–2).

TABLE 1—GRAY WOLF WINTER POPULATIONS IN MINNESOTA, WISCONSIN, AND MICHIGAN (EXCLUDING ISLE ROYALE) FROM 1976 THROUGH 2006

[Note that there are several years between the first three estimates]

Year	Minnesota	Wisconsin	Michigan	WI & MI Total
1976	1,000–1,200	.....	.....	.....
1978–79	1,235	.....	.....	.....
1988–89	1,500–1,750	31	3	34
1989–90	.....	34	10	44
1990–91	.....	40	17	57
1991–92	.....	45	21	66
1992–93	.....	40	30	70
1993–94	.....	57	57	114
1994–95	.....	83	80	163
1995–96	.....	99	116	215
1996–97	.....	148	113	261
1997–98	2,445	180	139	319
1998–99	.....	205	169	374
1999–2000	.....	248	216	464
2000–01	.....	257	249	506
2001–02	.....	327	278	604
2002–03	.....	335	321	656
2003–04	3,020	373	360	733
2004–05	.....	*435	405	840

TABLE 1—GRAY WOLF WINTER POPULATIONS IN MINNESOTA, WISCONSIN, AND MICHIGAN (EXCLUDING ISLE ROYALE) FROM 1976 THROUGH 2006—Continued

[Note that there are several years between the first three estimates]

Year	Minnesota	Wisconsin	Michigan	WI & MI Total
2005–06	.....	465	434	899

* Previous estimate of 425 has been corrected, based on subsequent location of 5 packs missed during survey period (Wydeven *et al.* 2006, pp. 9–10).

The 1997–98 survey concluded that approximately 2,445 wolves existed in about 385 packs in Minnesota during that winter period (90 percent confidence interval from 1,995 to 2,905 wolves) (Berg and Benson 1999, p. 4). This figure indicated the continued growth of the Minnesota wolf population at an average rate of about 3.7 percent annually from 1970 through 1997–98. Between 1979 and 1989 the annual growth rate was about 3 percent, and it increased to between 4 and 5 percent in the next decade (Berg and Benson 1999, 5, Fuller *et al.* 1992, p. 51). As of the 1998 survey, the number of Minnesota wolves was approximately twice the planning goal for Minnesota, as specified in the Eastern Recovery Plan (USFWS 1992, p. 28).

Minnesota DNR conducted another survey of the State's wolf population and range during the winter of 2003–04, again using similar methodology. That survey concluded that an estimated 3,020 wolves in 485 packs occurred in Minnesota at that time (90 percent confidence interval for this estimate is 2,301 to 3,708 wolves). Due to the wide overlap in the confidence intervals for the 1997–98 and 2003–04 surveys, the authors conclude that, although the population point estimate increased by about 24 percent over the 6 years between the surveys (about 3.5 percent annually), there was no statistically significant change in the State's wolf population during that period (Erb and Benson 2004, pp. 7 and 9).

As wolves increased in abundance in Minnesota, they also expanded their distribution. During 1948–53, the major wolf range was estimated to be about 11,954 sq mi (31,080 sq km) (Stenlund 1955, p. 19). A 1970 questionnaire survey resulted in an estimated wolf range of 14,769 sq mi (38,400 sq km) (calculated by Fuller *et al.* 1992, p. 43, from Leirfallom 1970). Fuller *et al.* (1992, p. 44), using data from Berg and Kuehn (1982), estimated that Minnesota primary wolf range included 14,038 sq mi (36,500 sq km) during winter 1978–79. By 1982–83, pairs or breeding packs of wolves were estimated to occupy an area of 22,000 sq mi (57,050 sq km) in northern Minnesota (Mech *et al.* 1988, p. 86). That study also identified an additional 15,577 sq mi (40,500 sq km) of peripheral range, where habitat appeared suitable but no wolves or only lone wolves existed. The 1988–89 study produced an estimate of 23,165 sq mi (60,200 sq km) as the contiguous wolf range at that time in Minnesota (Fuller *et al.* 1992, pp. 48–49; Berg and Benson 1999, p. 3, 5), an increase of 65 percent over the primary range calculated for 1978–79. The 1997–98 study concluded that the contiguous wolf range had expanded to 33,971 sq mi (88,325 sq km), a 47 percent increase in 9 years (Berg and Benson 1999, p. 5). By that time the Minnesota wolf population was using most of the occupied and peripheral range identified by Mech *et al.* (1988, p. 86). The wolf population in Minnesota had recovered to the point that its contiguous range covered approximately 40 percent of the State during 1997–98. In contrast, the 2003–04 survey failed to show a continuing expansion of wolf range in Minnesota, and any actual increase in wolf numbers since 1997–98 was attributed to increased wolf density within a stabilized range (Erb and Benson 2004, p. 7).

Although Minnesota DNR does not conduct a formal wolf population survey annually, it includes the species in its annual carnivore track survey. This survey, standardized and operational since 1994, provides an annual index of abundance for several species of large carnivores by counting their tracks along 51 standardized survey routes in the northern portion of Minnesota. Based on these surveys, the wolf track indices for winter 2004–05 showed little change from the previous winter, and no statistically significant trends are apparent since 1994. However, the data show some indication of an increase in wolf density (Erb 2005, p. 2, 5). Thus, the winter track survey results are consistent with a stable or slowly increasing wolf population in northern Minnesota over this 11-year period.

Wisconsin Recovery

Wolves were considered to have been extirpated from Wisconsin by 1960. No formal attempts were made to monitor the State's wolf population from 1960 until 1979. From 1960 through 1975, individual wolves and an occasional wolf pair were reported. There is no documentation, however, of any wolf reproduction occurring in Wisconsin, and the wolves that were reported may have been dispersing animals from Minnesota.

Wolves are believed to have returned to Wisconsin in more substantial numbers around 1975, and the Wisconsin Department of Natural Resources (WI DNR) began wolf population monitoring in 1979–80 and estimated a statewide population of 25 wolves at that time (Wydeven and Wiedenhoeft 2000, pp. 151, 159). This population remained relatively stable for several years, then declined slightly to approximately 15 to 19 wolves in the mid-1980s. In the late 1980s, the Wisconsin wolf population began an increase that has continued into 2006 (Wydeven *et al.* 2006, p. 35).

Wisconsin DNR intensively surveys its wolf population annually using a combination of aerial, ground, and satellite radio telemetry, complemented by snow tracking and wolf sign surveys (Wydeven *et al.* 2006, pp. 4–5). Wolves are trapped from May through September and fitted with radio collars, with a goal of having at least one radio-collared wolf in about half of the wolf packs in Wisconsin. Aerial locations are obtained from each functioning radio-collar about once per week, and pack territories are estimated and mapped from the movements of the individuals who exhibit localized patterns. From December through March, the pilots make special efforts to visually locate and count the individual wolves in each radio-tracked pack. Snow tracking is used to supplement the information gained from aerial sightings and to provide pack size estimates for packs lacking a radio-collared wolf. Tracking is done by assigning survey blocks to trained trackers who then drive snow-covered roads in their blocks and follow all wolf tracks they encounter. Snowmobiles are used to locate wolf tracks in more remote areas with few roads. The results of the aerial and

ground surveys are carefully compared to properly separate packs and to avoid over-counting (Wydeven *et al.* 2006a, pp. 4–5). The number of wolves in each pack is estimated based on the aerial and ground observations made of the individual wolves in each pack over the winter.

Because the monitoring methods focus on wolf packs, lone wolves are likely undercounted in Wisconsin. As a result, the annual population estimates are probably slight underestimates of the actual wolf population within the State during the late-winter period. Fuller (1989, p. 19) noted that lone wolves are estimated to compose from 2 to 29 percent of the total population in the area. Also, these estimates are made at the low point of the annual wolf population cycle; the late-winter surveys produce an estimate of the wolf population at a time when most winter mortality has already occurred and before the birth of pups. Thus, Wisconsin wolf population estimates are conservative in two respects: They undercount lone wolves and the count is made at the annual low point of the population. This methodology is consistent with the recovery criteria established in the 1992 Recovery Plan, which established numerical criteria to be measured with data obtained by late-winter surveys.

From mid-September 2005 through mid-April 2006, 43 radio collars were active on Wisconsin wolves, including 38 packs. An estimated 465 to 502 wolves in 115 packs, including 16 to 17 wolves on Native American reservations, were in the State in early 2006, representing a 7 percent increase from 2005 (Wydeven *et al.* 2006, pp. 1, 6).

Wisconsin population estimates for 1985 through 2006 increased from 15 to 465–502 wolves (see Table 1 above) and from 4 to 115 packs (Wydeven *et al.* 2006, pp. 1, 35). This represents an annual increase of 21 percent through 2000, and an average annual increase of 11 percent for the most recent 6 years.

In 1995, wolves were first documented in Jackson County, Wisconsin, well to the south of the northern Wisconsin area occupied by other Wisconsin wolf packs. The number of wolves in this central Wisconsin area has dramatically increased since that time. During the winter of 2004–05, there were 53–56 wolves in 14 packs in the central forest wolf range (Zone 2 in the Wisconsin Wolf Management Plan; WI DNR 1999, p. 18) and an additional 17–19 wolves in 7 packs in the marginal habitat in Zone 3, located between Zone 1 (northern forest wolf range) and Zones 2 and 4 (Wydeven *et al.* 2006, pp. 6, 33).

During the winter of 2002–03, 7 wolves were believed to be primarily occupying Native American reservation lands in Wisconsin (Wydeven *et al.* 2003, p. 9); this increased to 11 to 13 wolves in the winter of 2004–05 (Wydeven in litt. 2005) and 16–17 in 2005–06. The 2005–06 animals consisted of 2 packs totaling 7 to 8 wolves on the Bad River Chippewa Reservation and a pack of 4 wolves on the Lac Courtes Oreilles Chippewa Reservation, both in northwestern Wisconsin. There also was a single pack of three wolves on the Lac du Flambeau Reservation and a two-wolf pack on the Menominee Reservation, in north-central and northeastern Wisconsin, respectively (Wydeven *et al.* 2006, pp. 27, 28, 33). Additional wolves have spent some time on the Red Cliff Chippewa Reservation, the St. Croix Chippewa Reservation, and the Ho Chunk Reservation in the last few years. It is likely that the Potowatomi Reservation lands will also host wolves in the near future (Wydeven in litt. 2005). Of these reservations the Ho-Chunk, St. Croix Chippewa, and Potowatomi are composed mostly of scattered parcels of land, and are not likely to provide significant amounts of wolf habitat.

In 2002, wolf numbers in Wisconsin alone surpassed the Federal criterion for a second population, as identified in the 1992 Recovery Plan (i.e., 100 wolves for a minimum of 5 consecutive years, as measured by 6 consecutive late-winter counts). Furthermore, in 2004 Wisconsin wolf numbers exceeded the Recovery Plan criterion of 200 animals for 6 successive late-winter surveys for an isolated wolf population. The Wisconsin wolf population continues to increase, although the slower rates of increase seen since 2000 may be the first indications that the State's wolf population growth and geographic expansion are beginning to level off. Mladenoff *et al.* (1997, p. 47) and Wydeven *et al.* (1999, p. 49) estimated that occupancy of primary wolf habitat in Wisconsin would produce a wolf population of about 380 animals in the northern forest area of the State plus an additional 20–40 wolves in the central forest area. If wolves occupy secondary habitat (areas with a 10–50 percent probability of supporting a wolf pack) in the State, their estimated population could be 50 percent higher or more (Wydeven *et al.* 1999, p. 49) resulting in a statewide population of 600 or more wolves.

Michigan Recovery

Wolves were extirpated from Michigan as a reproducing species long before they were listed as endangered in 1974. Prior to 1991, and excluding Isle Royale, the last known breeding population of wild Michigan wolves occurred in the mid-1950s. However, as wolves began to reoccupy northern Wisconsin, the Michigan Department of Natural Resources (MI DNR) began noting single wolves at various locations in the UP of Michigan. In 1989, a wolf pair was verified in the central UP, and it produced pups in 1991. Since that time, wolf packs have spread throughout the UP, with immigration occurring from Wisconsin on the west and possibly from Ontario on the east. They now are found in every county of the UP, with the possible exception of Keweenaw County (Huntzinger *et al.* 2005, p. 6).

The MI DNR annually monitors the wolf population in the UP by intensive late-winter tracking surveys that focus on each pack. The UP is divided into seven monitoring zones, and specific surveyors are assigned to each zone. Pack locations are derived from previous surveys, citizen reports, and extensive ground and aerial tracking of radio-collared wolves. During the winter of 2004–05 at least 87 wolf packs were resident in the UP (Huntzinger *et al.* 2005, p. 6). A minimum of 40 percent of these packs had members with active radio-tracking collars during the winter of 2004–05 (Huntzinger *et al.* 2005, p. 6–7). Care is taken to avoid double-counting packs and individual wolves, and a variety of evidence is used to distinguish adjacent packs and accurately count their members. Surveys along the border of adjacent monitoring zones are coordinated to avoid double-counting of wolves and packs occupying those border areas. In areas with a high density of wolves, ground surveys by 4 to 6 surveyors with concurrent aerial tracking are used to accurately delineate territories of adjacent packs and count their members (Beyer *et al.* 2004, pp. 2–3, Huntzinger *et al.* 2005, pp. 3–6; Potvin *et al.* 2005, p. 1661). As with Wisconsin, the Michigan surveys likely miss many lone wolves, thus underestimating the actual population.

Annual surveys have documented minimum late-winter estimates of wolves occurring in the UP as increasing from 57 wolves in 1994 to 434 in 91 packs in 2006 (see Table 1 above). Over the last 10 years the annualized rate of increase has been about 18 percent (Beyer *et al.* 2006, p. 35; Huntzinger *et al.* 2005, p. 6; MI DNR

2006a; Roell in litt. 2006a). The rate of annual increase has varied from year to year during this period, but there appears to be two distinct phases of population growth, with relatively rapid growth (24.3 to 25.9 percent per year) from 1997 through 2000 and slower growth (11.6 to 15.5 percent from 2000 through 2005 and 7.2 percent in 2006) since then. As with the Wisconsin wolves, the number of wolves in the Michigan UP wolf population by itself has surpassed the recovery criterion for a second population in the eastern United States (i.e., 100 wolves for a minimum of 5 consecutive years, based on 6 late-winter estimates), as specified in the Federal Recovery Plan, since 2001. In addition, the UP numbers have now surpassed the Federal criterion for an isolated wolf population of 200 animals for 6 successive late-winter surveys (USFWS 1992, pp. 24–26).

To date, no wolf packs are known to be primarily using tribal-owned lands in Michigan (Roell in litt. 2006b). Native American tribes in the UP of Michigan own small, scattered parcels of land. As such, no one tribal property would likely support a wolf pack. However, as wolves occur in all counties in the UP and range widely, tribal land is likely utilized periodically by wolves.

The wolf population of Isle Royale National Park, Michigan, is not considered to be an important factor in the recovery or long-term survival of wolves in the WGL DPS. This is a small and isolated wolf population that probably has not had any contact with mainland wolf populations since its founding pair crossed the Lake Superior ice in the late 1940s (Peterson *et al.* 1998, p. 828). This wolf population lacks sufficient genetic uniqueness (Wayne *et al.* 1991, pp. 47–49), and due to the island's small size, cannot satisfy the discreteness criterion for a separate DPS. For these same reasons it will not make a significant numerical contribution to gray wolf recovery, although long-term research on this wolf population has added a great deal to our knowledge of the species. The wolf population on Isle Royale has ranged from 12 to 50 wolves since 1959, and was 30 wolves in the winter of 2005–06 (Peterson and Vucetich 2006, p. 6).

Although there have been verified reports of wolf sightings in the Lower Peninsula of Michigan, resident breeding packs have not been confirmed there. In October 2004 the first gray wolf since 1910 was documented in the Lower Peninsula (LP). This wolf had been trapped and radio-collared by the MI DNR while it was a member of a central UP pack in late 2003. At some point it had moved to the LP and ultimately was killed by a trapper who believed it was a coyote (MI DNR 2004). Shortly after that, MI DNR biologists and conservation officers confirmed that two additional wolves were traveling together in Presque Isle County in the northern Lower Peninsula (NLP). A subsequent two-week survey was conducted in that area, but no additional evidence of wolf presence was found (Huntzinger *et al.* 2005, p. 35). Recognizing the likelihood that small numbers of gray wolves will eventually move into the Lower Peninsula and form persistent packs (Potvin 2003, pp. 29–30, Gehring and Potter 2005, p. 1242; Beyer *et at.* 2006, p. 35), MI DNR has begun a revision of its Wolf Management Plan in part to incorporate provisions for wolf management there.

Summary for Wisconsin and Michigan

The two-State wolf population, excluding Isle Royale wolves, has exceeded 100 wolves since late-winter 1993–94 and has exceeded 200 wolves since late-winter 1995–96. Therefore, the combined wolf population for Wisconsin and Michigan has exceeded the second population recovery goal of the 1992 Recovery Plan for a non-isolated wolf population since 1999. Furthermore, the two-State population has exceeded the recovery goal for an isolated second population since 2001.

Other Areas in and Near the Western Great Lakes DPS

As described earlier, the increasing wolf population in Minnesota and the accompanying expansion of wolf range westward and southwestward in the State have led to an increase in dispersing wolves that have been documented in North and South Dakota in recent years. No surveys have been conducted to document the number of wolves present in North Dakota or South Dakota. However, biologists who are familiar with wolves there generally agree that there are only occasional lone dispersers that appear primarily in the eastern portion of these States. There were reports of pups being seen in the Turtle Mountains of North Dakota, in 1994 (Collins in litt. 1998), an adult male wolf was shot near Devil's Lake, North Dakota in 2002, another adult male shot in Richland County in extreme southeastern North Dakota in 2003 (Fain in litt. 2006), and a vehicle-killed adult male found near Sturgis, South Dakota, in 2006 (Larson in litt. 2006a). In contrast to the other South Dakota wolves of the last twenty-five years, this animal has been genetically identified as having come from the Greater Yellowstone area (Fain in litt. 2006). See the Delineating the WGL Gray Wolf DPS for a detailed discussion of movement of wolves.

Wolf dispersal is expected to continue as wolves travel away from the more saturated habitats in the core recovery areas into areas where wolves are extremely sparse or absent. Unless they return to a core recovery population and join or start a pack there, they are unlikely to contribute to long-term maintenance of recovered wolf populations. Although it is possible for them to encounter a mature wolf of the opposite sex, to mate, and to reproduce outside the core wolf areas, the lack of large expanses of unfragmented public land make it unlikely that any wolf packs will persist in these areas, and this is a bottleneck that seriously impedes further expansion. The only exception is the NLP of Michigan, where several studies indicate that a persistent wolf population may develop (Gehring and Potter 2005, p. 1242; Potvin 2003, 29–30), perhaps dependent on occasional to frequent immigration of UP wolves. However, currently existing wolf populations in Minnesota, Wisconsin, and the UP of Michigan have already greatly exceeded the Federal recovery criteria and are not dependent on wolves or wolf populations from other areas of the WGL DPS to maintain these recovered numbers.

Previous Federal Action

On April 1, 2003, we published a final rule revising the listing status of the gray wolf across most of the conterminous United States (68 FR 15804). Within that rule, we identified three distinct population segments (DPS) for the gray wolf. Gray wolves in the Western DPS and the Eastern DPS were reclassified from endangered to threatened, except where already classified as threatened or as an experimental population. Gray wolves in the Southwestern DPS retained their previous endangered or experimental population status. Three existing gray wolf experimental population designations were not affected by the April 1, 2003, final rule. We removed gray wolves from the lists of threatened and endangered wildlife in all or parts of 16 southern and eastern States where the species historically did not occur. We also established a new special rule under section 4(d) of the Act for the threatened Western DPS to increase our ability to effectively manage wolf-human conflicts outside the two experimental population areas in the Western DPS. In addition, we established a second section 4(d) rule that applied provisions similar to those

previously in effect in Minnesota to most of the Eastern DPS. These two special rules were codified in 50 CFR 17.40(n) and (o), respectively.

On January 31, 2005, and August 19, 2005, U.S. District Courts in Oregon and Vermont, respectively, ruled that the April 1, 2003, final rule violated the Act (*Defenders of Wildlife* v. *Norton*, 03–1348–JO, D. OR 2005; *National Wildlife Federation* v. *Norton*, 1:03–CV–340, D. VT. 2005). The Courts' rulings invalidated the revisions to the gray wolf listing. Therefore, the status of gray wolves outside of Minnesota and outside of areas designated as nonessential experimental populations reverted back to endangered (as had been the case prior to the 2003 reclassification). The courts also invalidated the three DPSs identified in the April 1, 2003, rule as well as the associated special regulations.

On March 27, 2006, we published a proposal (71 FR 15266–15305) to identify a WGL DPS of the gray wolf, to remove the WGL DPS from the protections of the Act, to remove designated critical habitat for the gray wolf in Minnesota and Michigan, and to remove special regulations for the gray wolf in Minnesota. The proposal was followed by a 90-day comment period, during which we held four public hearings on the proposal.

On February 8, 2007, we published a final rule identifying a WGL DPS of the gray wolf, removing the WGL DPS from the protections of the Act, removing designated critical habitat for the gray wolf in Minnesota and Michigan, and removing special regulations for the gray wolf in Minnesota (72 FR 6052).

On April 16, 2007, three parties filed a lawsuit against the U.S. Department of the Interior (Department) and the Service, challenging the Service's February 8, 2007 (72 FR 6052), identification and delisting of the WGL DPS. The plaintiffs argued that the Service may not identify a DPS within a broader pre-existing listed entity for the purpose of delisting the DPS. Based on this argument, the U.S. District Court for the District of Columbia remanded and vacated the February 7, 2008, WGL DPS final rule (72 FR 6052). The court found that the Service had made that decision based on its interpretation that the plain meaning of the ESA authorizes the Service to identify 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 (*Humane Society of the United States* v. *Kempthorne*, Civ. No. 07–0677, 2008 U.S. Dist. LEXIS 74495 (D.D.C. Sept. 29, 2008) (J. Friedman).

On December 11, 2008, we published a notice reinstating protections for the gray wolf in the western Great Lakes and northern Rocky Mountains pursuant to court-orders (73 FR 75356).

Please refer to the March 27, 2006, (71 FR 15266–15305) proposed rule for further information on previous Federal actions.

Issues on Remand

In an Opinion dated September 29, 2008, the United States District Court for the District of Columbia vacated the final rule (72 FR 6052) (Feb. 8, 2007) identifying the Western Great Lakes Distinct Population Segment of gray wolf and delisting that DPS. *The Humane Society of the United States* v. *Kempthorne*, Civ. No. 07–0677, 2008 U.S. Dist. LEXIS 74495 (D.D.C. Sept. 29, 2008) (J. Friedman). Judge Friedman remanded the matter to the Secretary to allow the agency to ''bring its expertise and experience to bear on the question of whether the Act permits it to use the DPS tool in the fashion it has proposed.'' *Id.* at *40. Judge Friedman instructed that the agency must explain how the agency's interpretation of the statute conforms to the text, structure, and legislative history of the ESA; how the agency's interpretation is consistent with judicial interpretations of the Act, if any; and how the agency's interpretation serves the Act's policy objectives. *Id.* In so doing, Judge Friedman did not find that the Service could not utilize the DPS tool to simultaneously identify and delist a DPS. Instead, Judge Friedman found that the record lacked an explanation on this point to which he could defer under *Chevron U.S.A., Inc.* v. *Natural Resources Defense Council, Inc.*, 467 U.S. 837 (1984), and afforded the agency an opportunity to respond.

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 Wildlife, 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. 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.

By vacating the previous final rule and remanding the rulemaking to the Service, the court required the Service to make a new final determination on the March 27, 2006 proposed rule (71 FR 15266) on which the vacated final rule was based. In that proposed rule, the Service provided public notice of its consideration of identifying the Western Great Lakes Distinct Population Segment of gray wolves and to remove that DPS from the List of Endangered and Threatened Wildlife. At that time, the Service requested public comments on the proposal and received 360 comments addressing a wide range of issues, including but not limited to the Service's use of the DPS tool in the manner proposed. Comments were received from 40 identifiable states, 5 foreign countries, 19 preservation and conservation organizations, 16 agricultural and livestock organizations, 249 private individuals, and 6 Native American governments or organizations. All of these comments were given meaningful consideration in the course of the Secretary promulgating this final rule.

This final rule constitutes a new final determination on the March 27, 2006 proposed rule. It is also substantially similar to the vacated final rule in form and substance, including the biological and ecological basis for its conclusions. This final rule differs in that it contains a section entitled ''Issues on Remand'' that represents the Secretary's response to the issues raised by the Court, in consultation with the Department of the Interior's Solicitor's Office. This section of the final rule merely addresses the narrow legal issue within the agency's expertise and experience—namely, whether the Secretary may simultaneously identify and delist a currently listed species. The section

entitled Distinct Vertebrate Population Segment Policy Overview responds to the court's question regarding the agency's past practice and use of DPSs.

Before issuing this final rule, we verified that no new scientific data exist that would alter our previous analysis of the relevant facts that serve as the basis for the Secretary's decision to identify the Western Great Lakes DPS and the Secretary's conclusion that the Western Great Lakes DPS should be removed from the list of threatened and endangered species because it has recovered and no longer meets the criteria for remaining on the list. Note that we did examine updated monitoring data and the final Michigan plan and determined that this new data merely supplements our existing record. The Service is simply responding to the narrow legal issues raised by the Court. Consequently, Section 553(b)(3)(B) of the Administrative Procedure Act (APA) does not require an additional period of public notice and comment.

We consulted with the Solicitor of the Department of the Interior to address the issue in Judge Friedman's opinion that the agency must explain how our interpretation of the statute conforms to the text, structure, and legislative history of the ESA; is consistent with judicial interpretations of the Act, if any; and serves the Act's policy objectives. 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), which fully addresses these issues. 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/.*

Geographical Area of the Western Great Lakes Distinct Population Segment

The geographical area of the WGL DPS is shown in Figure 1, below, and is described as all of Minnesota, Wisconsin, and Michigan; the portion of North Dakota 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; the portion of South Dakota north and east of the Missouri River; the portions of Iowa, Illinois, and Indiana north of the centerline of Interstate Highway 80; and the portion of Ohio north of the centerline of Interstate Highway 80 and west of the Maumee River at Toledo.

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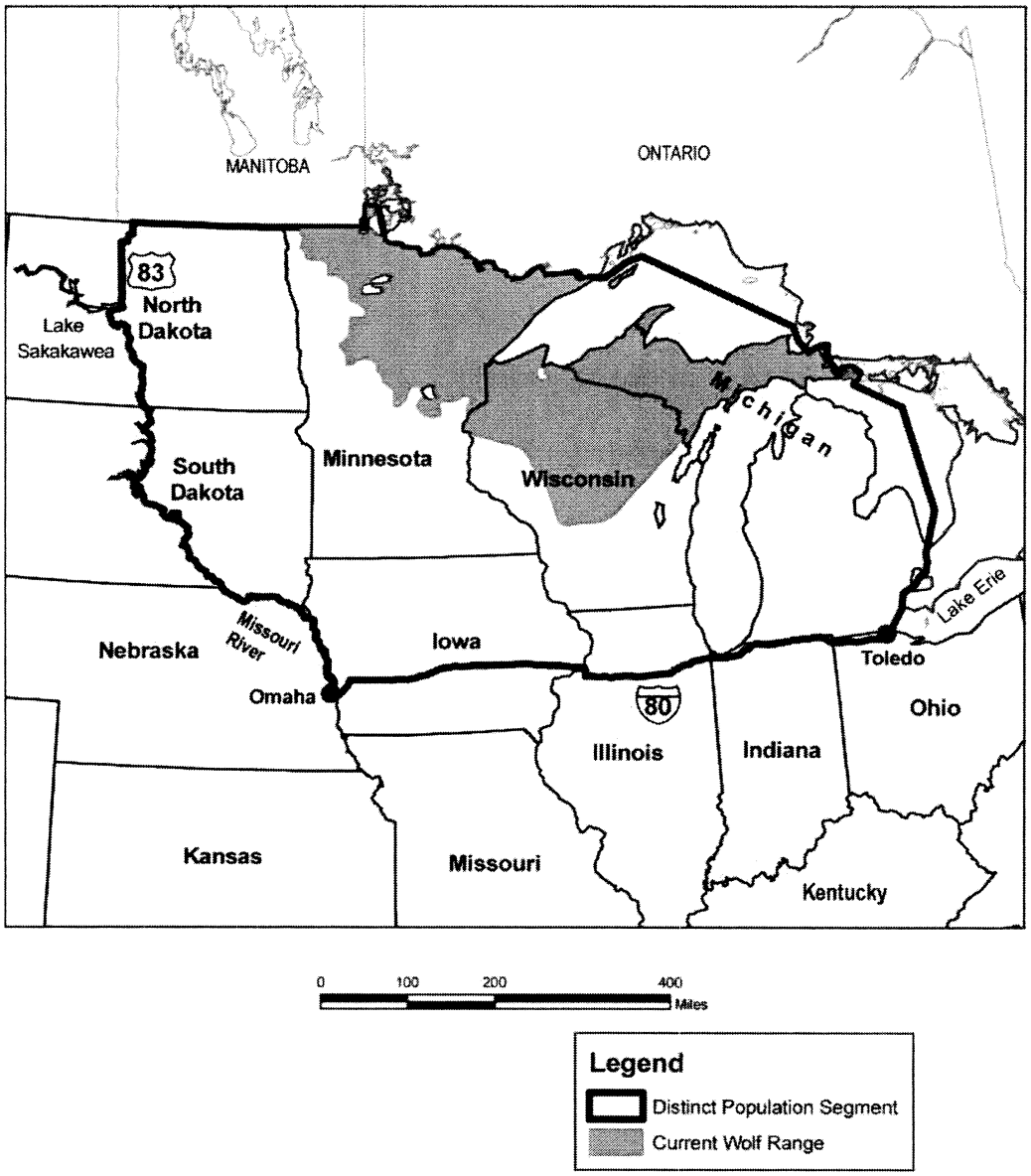
Figure 1. Western Great Lakes Distinct Population Segment



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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 (NMFS) published a policy regarding the identification of distinct vertebrate population segments under the Act (61 FR 4722, February 7, 1996). Under this policy, two factors are considered in a decision regarding the potential identification of a DPS and then a final factor is considered regarding the listing, reclassification, or delisting of the DPS. The first two factors 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 can be identified as a DPS. Then the third factor, the population segment's conservation status, is evaluated in relation to the Act's standards for listing, delisting, or reclassification (i.e., is the DPS endangered or threatened).

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.

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 of the following conditions—(1) it 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) it is delimited by international governmental boundaries within which differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of section 4(a)(1)(D) of the Act.

Markedly Separated From Other Populations of the Taxon—The western boundary of the WGL DPS is approximately 400 mi (644 km) from the nearest known wolf packs in Wyoming and Montana. The distance between those western packs and the nearest packs within the WGL DPS is nearly 600 miles (966 km). The area between Minnesota packs and Northern Rocky Mountain packs largely consists of unsuitable habitat, with only scattered islands of possibly suitable habitat, such as the Black Hills of eastern Wyoming and western South Dakota. There are no known gray wolf populations to the south or east of the WGL DPS.

As discussed in the previous section, gray wolves are known to disperse over vast distances, but straight line documented dispersals of 400 mi (644 km) or more are very rare. While we cannot rule out the possibility of a Midwest wolf traveling 600 miles or more and joining or establishing a pack in the Northern Rockies, such a movement has not been documented and is expected to happen very infrequently, if at all. Similar movements from the NRM wolf population into the WGL DPS are unknown and are expected to happen infrequently. The 2006 Sturgis, South Dakota, wolf is the closest that an NRM wolf has come to entering the WGL DPS (Fain in litt. 2006). However, the Sturgis wolf still had over 300 mi (500 km) to travel before it would encounter the nearest WGL DPS wolf pack. As the discreteness criterion requires that the DPS be ''markedly separated'' from other populations of the taxon rather than requiring complete isolation, this high degree of physical separation between the Western Great Lakes and the Northern Rocky Mountains satisfies the discreteness criterion. Similarly, we feel it is unlikely for wolves to cross the eastern boundary into the Laurentian Mixed Habitat Province of New York, Pennsylvania, and New England due to inhospitable conditions.

Delimited by International Boundaries with Significant Management Differences Between the U.S. and Canada—This border has been used as the northern boundary of the listed entity since gray wolves were reclassified in the 48 States and Mexico in 1978. There remain significant cross-border differences in exploitation, management, conservation status, and regulatory mechanisms. More than 50,000 wolves exist in Canada, where suitable habitat is abundant, human harvest of wolves is common, Federal protection is absent, and provincial regulations provide widely varying levels of protection. In general, Canadian wolf populations are sufficiently large and healthy so that harvest and population regulation, rather than protection and close monitoring, is the management focus. There are an estimated 4,000 wolves in Manitoba (Manitoba Conservation undated). Hunting is allowed nearly province-wide, including in those provincial hunting zones adjoining northwestern Minnesota, with a current season that runs from August 28, 2006, through March 31, 2007 (Manitoba Conservation 2006a). Trapping wolves is allowed province-wide except in and immediately around Riding Mountain National Park (southwestern Manitoba), with a current season running from October 14, 2006, through February 28 or March 31, 2007 (varies with trapping zone) (Manitoba Conservation 2006b). The Ontario Ministry of Natural Resources estimates there are 8,850 wolves in the province, based on prey composition and abundance, topography, and climate. Wolf numbers in most parts of the province are believed to be stable or increasing since about 1993 (Ontario MNR 2005a, pp. 7–9). In 2005 Ontario limited hunting and trapping of wolves by closing the season from April 1 through September 14 in central and northern Ontario (Ontario MNR 2005b). In southern Ontario (the portion of the province that is adjacent to the WGL DPS), wolf hunting and trapping is permitted year around except within, and immediately around, Algonquin Provincial Park in southeastern Ontario (north of Lake Ontario) where seasons are closed all year (Ontario MNR 2005c).

We, therefore, conclude that the above-described WGL DPS boundary satisfies both conditions that can be used to demonstrate discreteness of a potential DPS.

Analysis for Significance

If we determine that 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—(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 WGL wolf DPS and thus are not included in our analysis for significance.

Unusual or Unique Ecological Setting—Wolves within the WGL DPS occupy the Laurentian Mixed Forest Province, a biotic province that is transitional between the boreal forest and the broadleaf deciduous forest. Laurentian Mixed Forest consists of mixed conifer-deciduous stands, pure deciduous forest on favorable sites, and pure coniferous forest on less favorable sites. Within the United States this biotic province occurs across northeastern Minnesota, northern Wisconsin, the UP, and the NLP, as well as the eastern half of Maine, and portions of New York and Pennsylvania (Bailey 1995). In the Midwest, current wolf distribution closely matches this province, except for the NLP and the Door Peninsula of Wisconsin, where wolf packs currently are absent. To the best of our knowledge, wolf packs currently do not inhabit the New England portions of the Laurentian Mixed Forest Province, nor do we expect wolves from the WGL DPS to move into them due to the vast distance between these two areas and inhospitable terrain they would need to traverse. Therefore, WGL wolves represent the only wolf packs in the United States occupying this province. Furthermore, WGL wolves represent the only use by gray wolf packs of any form of eastern coniferous or eastern mixed coniferous-broadleaf forest in the United States.

Significant Gap in the Range of the Taxon—This factor may be primarily of value when considering the initial listing of a taxon under the Act to prevent the development of a major gap in a taxon's range (''the loss of the discrete population segment would result in a significant gap in the range of the taxon'' (61 FR 4725)). However, this successful restoration of a viable wolf metapopulation to large parts of Minnesota, Wisconsin, and Michigan has filled a significant gap in the historical range of the wolf in the United States, and it provides an important extension of the range of the North American gray wolf population. The recovered Western Great Lakes wolf metapopulation is the only wolf population in the conterminous States east of the Rocky Mountains except for the red wolves being restored along the Atlantic Coast and currently holds about 80 percent of North American gray wolves that occur south of Canada.

Discrete Vertebrate Population Segment Conclusion

We conclude, based on our review of the best available scientific data, that the WGL DPS is discrete from other wolf populations as a result of physical separation and the international border with Canada. The DPS is significant to the taxon to which it belongs because it contains the only populations of the species in the Laurentian Mixed Forest Biotic Province in the United States, it contains a wolf metapopulation that fills a large gap in the historical range of the taxon; and it contains the majority of gray wolves in the conterminous States. Therefore, we have determined that this population segment of wolves satisfies the discreteness and significance criteria required to identify it as a DPS. The evaluation of the appropriate conservation status for the WGL DPS is found below.

Delineating the WGL Gray Wolf DPS

In contrast to a species or a subspecies, a DPS is a biological population that is delineated by a boundary that is based on something other than established taxonomic distinctions. Therefore, the starting point for delineating a DPS is the biological population or metapopulation, and a geographical delineation of the DPS must reasonably represent the population/metapopulation and its biological characteristics.

To delineate the boundary of the WGL DPS, we considered the current distribution of wolves in the Midwest and the characteristic movements of those wolves and of gray wolves elsewhere. We examined the available scientific data on long-distance movements, including long-distance movements followed by return movements to the vicinity of the natal pack. We concluded that wolf behavior and the nature of wolf populations require that we include within the area of the DPS some subset of known long-distance movement locations. However, as described below, wolf biology and common sense argue against the inclusion within the DPS boundary of all known or potential long-distance movements.

This analysis resulted in a WGL DPS boundary that is shown in Figure 1. As discussed below, this DPS has been delineated to include the core recovered wolf population plus a wolf movement zone around the core wolf populations. This geographic delineation is not intended to include all areas to which wolves have moved from the Great Lakes population. Rather, it includes the area currently occupied by wolf packs in Minnesota, Wisconsin, and Michigan; the nearby areas in these States, including the Northern Lower Peninsula of Michigan, in which wolf packs may become established in the foreseeable future; and a surrounding area into which Minnesota, Wisconsin, and Michigan wolves occasionally move but where persistent packs are not expected to be established because suitable habitat is rare and exists only as small patches. The area surrounding the core wolf populations includes the locations of most known dispersers from the core populations, especially the shorter and medium-distance movements from which wolves are most likely to return to the core areas and contribute to the recovered wolf population.

The WGL areas that are regularly occupied by wolf packs are well documented in Minnesota (Erb and Benson 2004, p. 12, fig. 3), Wisconsin (Wydeven *et al.* 2006, p. 33, fig. 1), and the UP of Michigan (Huntzinger *et al.* 2005, pp. 25–27, figs. 4–6). Wolves have successfully colonized most, perhaps all, suitable habitat in Minnesota. Minnesota data from the winter of 2003–04 indicate that wolf numbers and density either have continued to increase slowly or have stabilized since 1997–98, and there was no expansion of occupied range in the State (Erb and Benson 2004, p. 7). Wisconsin wolves now occupy most habitat areas believed to have a high probability of wolf occurrence except for some areas of northeastern Wisconsin, and the State's wolf population continues to annually increase in numbers and, to a lesser degree, in area (Wydeven *et al.* 2006, p. 33). The UP of Michigan has wolf packs throughout, although the current population remains well below the estimated biological carrying capacity (Mladenoff *et al.* 1997, pp. 25–27, and

figs. 5 & 7) and will likely continue to increase in numbers in the UP for at least several more years.

When delineating the WGL DPS, we had to consider the high degree of mobility shown by wolves. The dispersal of wolves from their natal packs and territories is a normal and important behavioral attribute of the species that facilitates the formation of new packs, the occupancy of vacant territories, and the expansion of occupied range by the ''colonization'' of vacant habitat. Data on wolf dispersal rates from numerous North American studies (summarized in Fuller *et al.* 2003, p. 179, Table. 6.6; Boyd and Pletscher 1999, p. 1102, Table 6) show dispersal rates of 13 to 48 percent of the individuals in a pack. Sometimes the movements are temporary, and the wolf returns to a location in or near its natal territory. In some cases a wolf may continue its movement for scores or even hundreds of miles until it locates suitable habitat, where it may establish a territory or join an existing pack. In other cases, a wolf is found dead at a distance from its original territory, leaving unanswered the questions of how far it would have gone and whether it eventually would have returned to its natal area or population.

Minnesota—The current record for a documented extra-territorial movement by a gray wolf in North America is held by a Minnesota wolf that moved a minimum (that is, the straight line distance from known starting point to most distant point) of at least 550 mi (886 km) northwest into Saskatchewan (Fritts 1983, p. 166–167). Nineteen other primarily Minnesota movements summarized by Mech (in litt. 2005) averaged 154 mi (248 km). Their minimum distance of travel ranged from 32–532 mi (53–886 km) with the minimum dispersal distance shown by known returning wolves ranging from 54 mi (90 km) to 307 mi (494 km).

Wisconsin—In 2004, a wolf tagged in Michigan was killed by a vehicle in Rusk County in northwestern Wisconsin, 295 miles (475 km) west of his original capture location in the eastern UP (Wydeven *et al.* 2005b, p. 4). A similar distance (298 mi, 480 km) was traveled by a north-central Wisconsin yearling female wolf that moved to the Rainy Lake region of Ontario during 1988–89 (Wydeven *et al.* 1995, p. 149).

Michigan—Drummer *et al.* (2002, pp. 14–15) reported 10 long-distance dispersal events involving UP wolves. One of these wolves moved to north-central Missouri and another to southeastern Wisconsin, both beyond the core wolf areas in the WGL. The average straight-line distance traveled by those two wolves was 377 mi (608 km), while the average straight-line distance for all 10 of these wolves was 232 mi (373 km). Their straight-line distances ranged from 41 to 468 mi (66 to 753 km).

Illinois and Indiana—The December 2002, Marshall County, Illinois, wolf likely dispersed from the Wisconsin wolf population, nearly 200 miles (322 km) to the north (Great Lakes Directory 2003). The Randolph County, Indiana wolf had traveled a minimum distance of at least 420 miles (676 km) to get around Lake Michigan from its central Wisconsin birthplace; it likely traveled much farther than that unless it went through the city or suburbs of Chicago (Wydeven *et al.* 2004, pp. 10–11). The Pike County, Illinois, wolf that was shot in late 2005 was about 300 mi (180 km) from the nearest wolf packs in central Wisconsin.

North Dakota, South Dakota, and Nebraska—Licht and Fritts (1994, p. 77) tabulated seven gray wolves found dead in North Dakota and South Dakota from 1981 through 1992 that are believed to have originated from Minnesota, based on skull morphometrics. Although none of these wolves were marked or radio-tracked, making it impossible to determine the point of initiation of their journey, a minimum travel distance for the seven of Minnesota origin can be determined from the nearest wolf breeding range in Minnesota. For the seven, the average distance to the nearest wolf breeding range was 160 mi (257 km) and ranged from 29 to 329 mi (46 to 530 km). One of these seven wolves moved west of the Missouri River before it died.

Genetic analysis of a wolf killed in Harding County, in extreme northwestern South Dakota, in 2001 indicated that it originated from the Minnesota—Wisconsin—Michigan wolf populations (Fain in litt. 2006). The straight-line travel distance to the nearest Minnesota wolf pack is nearly 400 miles (644 km).

The wolf from the Greater Yellowstone area that was killed by a vehicle on Interstate 90 near Sturgis, SD, in March of 2006 traveled a minimum straight-line distance of about 270 mi (435 km) from the nearest known Greater Yellowstone pack before it died (USFWS *et al.* 2006, in USFWS Program Report, Figure 1).

A large canid was shot by a Boyd County, Nebraska, rancher in late 1994 or early 1995, likely after crossing the frozen Missouri River from South Dakota (Anschutz in litt. 2006, Jobman in litt. 1995). It was determined to be a wolf that originated from the Great Lakes wolf populations (Fain in litt. 2006), whose nearest pack would have been about 300 mi (480 km) away. A wolf illegally killed near Spalding, Nebraska, in December of 2002 also originated from the Minnesota—Wisconsin—Michigan wolf population, as determined by genetic analysis (Anschutz in litt. 2003, Fain in litt. 2006). The nearest Minnesota wolf pack is nearly 350 miles (563 km) from this location.

Other notable extra-territorial movements—Notable are several wolves whose extra-territorial movements were radio-tracked in sufficient detail to provide insight into their actual travel routes and total travel distances for each trek, rather than only documenting straight-line distance from beginning to end-point. Merrill and Mech (2000, pp. 429–431) reported on four such Minnesota wolves with documented travel distances ranging from 305 to 2,641 mi (490 to 4,251 km) and an average travel route length of 988 mi (1590 km). Wydeven (1994, pp. 20–22) described a Wisconsin wolf that moved from northwestern Wisconsin to the northern suburbs of St. Paul, Minnesota, for 2 weeks (apparently not seen or reported to authorities by the local residents), then moved back to north-central Wisconsin. The total travel distance was 278 mi (447km) from her natal pack into Minnesota and on to the north-central Wisconsin location where she settled down.

While investigating the origins of Scandinavian wolf populations, Linnell *et al.* (2005, p. 387) compiled gray wolf dispersal data from 21 published studies, including many cited separately here. Twenty-two of 298 compiled dispersals (7.4 percent) were over 300 km (186 mi). Eleven dispersals (3.7 percent) were over 500 km (311 mi). Because of the likelihood that many long-distance dispersers are never reported, they conclude that the proportion of long-distance dispersers is probably severely underestimated.

From these extra-territorial movement records we conclude that gray wolf movements of over 200 miles (320 km) straight-line distance have been documented on numerous occasions, while shorter distance movements are more frequent. Movements of 300 miles (480 km) straight-line distance or more are less common, but include one Minnesota wolf that journeyed a straight-line distance of 300 mi (480 km) and a known minimum travel distance of 2,550 mi (4,251 km) before it reversed direction, as determined by its satellite-tracked collar. This wolf returned to a spot only 24 mi (40 km) from its natal territory (Merrill and Mech 2000, p. 430). While much longer movements

have been documented, including some by midwestern wolves, return movements to the vicinity of natal territories have not been documented for extra-territorial movements beyond 300 mi (480 km).

Based on these extra-territorial movement data, we conclude that affiliation with the midwestern wolf population has diminished and is essentially lost when dispersal takes a Midwest wolf a distance of 250 to 300 miles (400 to 480 km) beyond the outer edge of the areas that are largely continuously occupied by wolf packs. Although some WGL wolves will move beyond this distance, available data indicate that longer distance dispersers are unlikely to return to their natal population. Therefore, they have lost their functional connection with and potential conservation value to, the WGL wolf population.

Wolves moving substantial distances outward from the core areas of Minnesota, Wisconsin, and Michigan will encounter landscape features that are at least partial barriers to further wolf movement, and that may—if crossed—impede attempts of wolves to return toward the WGL core areas. If such partial barriers are in a location that has separate utility in delineating the biological extent of a wolf population, they can and should be used to delineate the DPS boundary. Such landscape features are the Missouri River in North Dakota and downstream to Omaha, Nebraska, and Interstate Highway 80 from Omaha eastward through Illinois, Indiana, and into Ohio, ending where this highway crosses the Maumee River in Toledo, Ohio. We do not believe these are absolute barriers to wolf movement. There is evidence that several Minnesota-origin wolves have crossed the Missouri River (Licht and Fritts 1994, pp. 75 & 77, Fig. 1 and Table 1; Anschutz in litt. 2003, 2006) and some Midwest wolves have crossed interstate highways (Merrill and Mech 2000, p. 430). There is also evidence that some wolves are hesitant to cross highways, (Whittington *et al.* 2004, pp. 7, 9; Wydeven *et al.* 2005b, p. 5; but see Blanco *et al.* 2005, pp. 315–316, 319–320 and Kohn *et al.* 2000, p. 22). Interstate highways and smaller roads are a known mortality factor for wolves and, therefore, are a partial barrier to wolf movements (Blanco *et al.* 2005, p. 320).

The recent death of a NRM wolf near Sturgis in western South Dakota (Fain in litt. 2006) suggests that the area of the Dakotas west of the Missouri River may be traversed by a small number of wolves coming from both the NRM and Great Lakes wolf populations, as well as wolves from Canada (Licht and Fritts 1994, pp. 75–77). Wolves in this area cannot be assumed to belong to the Great Lakes wolf population, supporting our belief that the DPS boundary should not be designed to include the locations of all known dispersers. As this record shows, an additional weakness of basing a DPS boundary on the location of the most distant dispersal is that it results in a boundary that is valid only until a more distant dispersal event is documented.

Peer Review

In accordance with the December 16, 2004, Office of Management and Budget's ''Final Information Quality Bulletin for Peer Review'', we have obtained comments from at least three independent scientific reviewers regarding the scientific data and interpretations contained in the March 27, 2006, proposed rule (71 FR 15266). The purpose of such review is to ensure that our delisting proposal provided to the public and our delisting decision is based on scientifically sound data, assumptions, and analyses. Peer reviewer comments were received during the public comment period from ten individuals and were considered as we made our final decision on the proposal. Substantive peer reviewer comments are summarized in the remaining paragraphs of this section as well as discussed in greater detail in the appropriate Issue/Response sections which follow.

All ten peer reviewers have extensive biological experience with gray wolves. Most are currently involved in wolf research for the Federal Government (three individuals in two agencies), Canadian Government (one reviewer), or universities (two individuals). One reviewer is a biologist for a tribe with extensive involvement in wolf recovery and management, one leads a long-term Federal wolf depredation control program, another directs an endangered species conservation organization, and the tenth is a retired State wolf biologist. None of the peer reviewers are employed by the Service or by State agencies within the WGL DPS.

All eight peer reviewers who expressed a clear opinion supported the biological approach we used to identify the DPS and its boundaries, and they agreed that the delisting criteria have been achieved by the DPS. Three of these eight had previously opposed the proposed 2003 identification and 2004 delisting of the much larger Eastern DPS. None of the peer reviewers stated that the currently proposed DPS boundary or delisting was inappropriate. One peer reviewer's expertise is limited to wolf diseases and causes of wolf mortality. This reviewer limited her comments to those areas. The remaining peer reviewer was unclear regarding support for, or opposition to, our biological basis for the proposed boundary of the DPS, but agreed that wolves in the Great Lakes have met the federally established delisting criteria.

In general, the peer reviewers judged the delisting proposal to be well researched, thorough, and adequate to support delisting of the WGL DPS. Except for one reviewer who stated that the State plans need greater emphasis on educating and informing the public, all comments related to State plans and our analysis of the plans indicated that the reviewers believed the State population goals were adequate and the protection and management actions contained in the plans would ensure viable wolf populations following delisting.

None of the peer reviewers expressed concerns with the expanded use of wolf control measures by the States following delisting. Several specifically stated that they were confident that the States would not allow human-caused mortality to threaten the security of viable populations within the three States. One reviewer, who has several decades of experience with wolf depredation control measures, expressed a belief that wolf control or harvest by the public will not result in excessive take of wolves.

There were no criticisms of, or recommendations to improve, the current population monitoring done by the three States. One reviewer, while noting that the Minnesota population estimate ''is probably much less accurate than [those developed by] MI or WI'' and likely overestimates the State's wolf population, went on to state that this is not a critical point and may not matter, because the Minnesota wolf population is well over the minimum number needed to delist. He also stated that ''managers have as good a dataset on wolves as just about any other species they manage, even white-tailed deer * * *.'' Another reviewer stated that the three States are using ''adequate and consistent techniques'' to develop their wolf population estimates.

There were no suggestions that other States within the DPS should be developing wolf management plans or wolf monitoring programs. However, one reviewer recommended that all States in the DPS cooperate in the documenting and reporting of wolves dispersing from the northern Minnesota,

Wisconsin, and Michigan recovery areas.

Several reviewers pointed out that, while there currently is sufficient habitat that is likely to remain secure for the foreseeable future, this should be monitored by the States after delisting. The fragmentation of private industrial forests for second homes and other developments was identified as a potential future threat to occupied wolf habitat. Most reviewers pointed to the need for effective and timely monitoring of wolf numbers and wolf health following delisting.

None of the peer reviewers expressed concern that the Wisconsin and Michigan Plans—being updated and revised, respectively, at the time the delisting proposal was published—would be weakened and substantially reduce protections for the wolves in the State. However, one of the reviewers urged that the two plans be finalized prior to delisting. Two peer reviewers specifically recommended that the Service complete the post-delisting monitoring plan prior to delisting.

One reviewer supported the identification of the DPS and its delisting and said its boundaries ''do not extend delisting beyond an area that is reasonably affected by the DPS.'' However, this reviewer cautioned that in delineating a DPS the Service should avoid over-emphasizing ''the importance of the biological (or population viability) aspect of 'significant portion of the range' '' within the Act's definitions of endangered and threatened. He provided a recent co-authored scientific publication that seems to argue for a primarily quantitative approach to determining what part of a species' range is significant. This same reviewer objected to the Service's interpretation of ''range'' to mean current range, when used in the context of ''significant portion of the range.''

Regarding the Northern Lower Peninsula of Michigan, one peer reviewer indicated his belief that wolves are likely to move into habitat there and the State should allow that to happen. Another reviewer agreed with the Service that the currently unoccupied habitat in the NLP is not a significant portion of their range in the WGL DPS.

One peer reviewer supported the delisting but criticized the ''bizarre aspect'' of it that would result in wolves in areas beyond the DPS retaining the Act's protection as endangered, when ''[t]he area outside the proposed DPS is precisely the area that the Eastern Timber Wolf recovery Team believed should not harbor wolves * * *.'' The reviewer recommends delisting gray wolves in the unsuitable habitat areas beyond the WGL DPS, as well.

Summary of Comments and Recommendations

We received 360 total comments, including 310 original letters and 50 form responses based on 2 form letters. These comments included 10 that we solicited from peer reviewers, as well as verbal and written comments received at public hearings. We received comments from 40 identifiable states and the District of Columbia, as well as 5 foreign countries. Private individuals submitted 249 of the comments. Nineteen came from preservation, conservation, or animal welfare organizations, and 16 were submitted by agriculture or livestock organizations. State agency representatives or elected officials provided 12 comments, and 6 were received from Native American government agencies or organizations.

Issue 1—One commenter requested the Service double the length of the public comment period and hold additional public hearings in all ''recipient states.''

Response—The Act and implementing regulations for adding or removing species from the list of threatened and endangered species require a public comment period of at least 60 days and holding one public hearing if requested within 45 days of the publication of the proposal (50 CFR 424.16). We opened a 90-day public comment period and held four public hearings in the States that would be most affected by the proposed changes. Additionally, we facilitated public involvement in this process by providing a great deal of information on our web site regarding wolf biology and behavior; wolf identification and wolf-dog hybrids; threats to human safety; depredation control programs; and our summaries of State wolf management plans and copies of those plans. We mailed summaries of the proposal to approximately 1,600 individuals and organizations that had previously expressed interest in wolf recovery and delisting issues, and we provided ways to submit comments via the web, e-mail, fax, and mail, as well as at the four hearings. We provided ample opportunities for interested individuals and organizations to learn about the proposal and to provide comments within the 90-day comment period and at the four hearings; therefore, we did not extend the comment period nor schedule additional hearings.

Issue 2—A number of comments expressed opposition to delisting, making statements such as ''wolves should always be protected'' by the Act, the Service ''should abandon its goal of delisting wolves in the US,'' and wolves should not be delisted until ''their numbers reach exorbitant levels,'' they have reached biological carrying capacity, or wolves have overpopulated and are damaging the natural ecosystem. Other commenters wanted the critical habitat designations to remain in place after delisting to keep the Service involved in preserving habitat for a delisted species.

Response—The Act provides the Federal Government with authority to protect and recover threatened and endangered species. When a species has been recovered to the extent that it no longer meets the definition of ''threatened'' or ''endangered'' the Act provides that it be removed from the Federal List of Endangered and Threatened Wildlife and Plants and its management be returned to the appropriate States and tribes (in cases where treaties identify such authorities for tribes). The goal of the Act is to recover and delist species that have been listed as threatened or endangered.

The gray wolf WGL DPS no longer meets the definition of threatened or endangered, because it has achieved long-standing recovery criteria by greatly expanding in numbers and geographic range and threats to its long-term viability have been reduced or eliminated. Therefore, the Act authorizes delisting the taxon, but it also requires that we continue to monitor the status of the species for a minimum of five years after delisting, and we can list it again if the monitoring results show that to be necessary.

''Critical habitat'' is a legal designation under the Act that is given to geographical areas that are essential to the conservation of a listed species. Critical habitat is designated only for endangered or threatened species, and any critical habitat designations must be removed if the taxon is removed from the Federal List of Endangered and Threatened Wildlife and Plants.

Issue 3—Numerous commenters indicated that our delisting proposal was based on unspecified political considerations, pressure from the livestock industry, exaggerated fears for human safety, pressure from deer hunters and furbearer trappers, and pressure from States. We were asked by other commenters to consider the value of wolves as an umbrella or keystone species, for keeping deer numbers in check, to maintaining healthy ungulate populations, in balancing nature, and providing a legal mechanism to protect habitat needed by other species. Others thought we should consider the economic benefits provided by a large

wolf population and recognize that protecting ''the entire ecology of Minnesota'' requires that we keep wolves listed under the Act.

Response—The Act requires that listing and delisting decisions be based entirely on whether a species is endangered or threatened due to one or more categories of threats (section 4(a)(1)) and that we make this determination ''solely on the basis of the best scientific and commercial data available.'' In compliance with the Act, the other considerations and factors described above have not been used in making this decision.

Issue 4—Several commenters stated that wolf recovery should include repopulating suitable habitat in the Lower Peninsula of Michigan, or that a larger geographical area needs to be reoccupied before recovery is achieved. One comment stated that population numbers alone cannot be used ''as the sole proof of long-term recovery.'' Other commenters pointed to scientific publications that advocate larger populations with more individuals to ensure long-term viability of species, in general.

Response—The Act states that the Service will develop recovery plans and, within these recovery plans, to the maximum extent practicable, establish ''objective, measurable criteria which, when met, would result in a determination * * * that the species be removed from the list * * *.'' (section 4(f)(1)(B)(ii)). Therefore, while a delisting decision must include an evaluation of the threats to a species, we must also establish and utilize measurable criteria to assess progress towards recovery. Our delisting decision is not based on population numbers alone, but also on population distribution and threats to that population and its habitat, as required by the Act.

Issue 5—We received several comments that stated that the recovery criteria have not been achieved because either the wolf population data are wrong, and/or because the Wisconsin-Upper Peninsula wolf population is not a second population as is required by the recovery criteria found in the 1992 Recovery Plan.

Response—We, and the peer reviewers of the delisting proposal, are fully satisfied that the wolf population estimates provided by the DNRs of Minnesota, Wisconsin, and Michigan demonstrate that the numerical recovery criteria have been achieved for far longer than the five years recommended in the Federal Recovery Plan. The methods used by WI and MI DNRs result in a conservative count of the wolves that are alive at the late-winter annual low point of the wolf population. The method used by the Minnesota DNR for its much larger wolf population is less precise, but even the lower bound of its 90 percent confidence interval (CI) exceeded the Federal Recovery Plan's Minnesota goal of 1,250–1,440 wolves back as far as the 1988–89 survey (Fuller *et al.* 1992, p. 50) and the CI lower bound has been well above that goal since then (Erb and Benson 2004, table 1). Therefore, we see no problem with using these Minnesota population estimates. The Recovery Team has also expressed confidence in the population estimates of all three States (Peterson in litt. 1999a, in litt. 1999b).

The 1992 Federal Recovery Plan describes two scenarios that would satisfy its requirement for a second viable wolf population. One scenario deals with the development of an isolated wolf population; such a population must be composed of at least 200 wolves over five successive years. The second scenario is a population that is located within 100 miles of another viable wolf population; such a population must consist of only 100 wolves for five consecutive years (USFWS 1992, pp 25–26). The Recovery Plan discusses the conservation tradeoffs of completely separate populations versus adjacent populations, and it specifically states that a wolf population larger than 100 wolves ''closely tied to the Minnesota population'' will be considered a viable population despite its small size, because of immigration of wolves from Minnesota (USFWS 1992, pp. 24–25). Although this Recovery Plan was written prior to the common acceptance and use of the conservation biology term ''metapopulation,'' this clearly was the concept being discussed and advocated in the Federal Recovery Plan. The second scenario describes what has occurred in the WGL DPS and therefore the wolves in Wisconsin and Michigan qualify as a second population.

Issue 6—Several comments stated that a DPS cannot be used for delisting a species; DPSs can only be identified for listing species as threatened or endangered.

Response—DPSs can be utilized for both listing and delisting species. 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 distinct population segment of any species of vertebrate fish or wildlife * * *.'' Therefore, the Act authorizes us to list, reclassify, and delist species, subspecies, and DPSs of vertebrate species. Furthermore, our ''Policy Regarding the Recognition of Distinct Vertebrate Population Segments under the Endangered Species Act'' states that the policy is intended for ''the purposes of listing, delisting, and reclassifying species under the Endangered Species Act * * *.'' (61 FR 4722, Feb. 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).

Most recently, on December 12, 2008, the Solicitor of the Department of the Interior issued a formal opinion, ''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 complete text of the Solicitor's formal opinion can be found at *http://www.fws.gov/midwest/wolf/*.

Issue 7—Several commenters, including State natural resource agencies, stated that the proposed DPS is too small and should be expanded to include all of their State (North Dakota, South Dakota, Iowa), and for Missouri, should include the northern two-thirds of the State. They expressed concerns that some gray wolves will disperse beyond the boundaries of the proposed WGL DPS, where they would have endangered status under the Act. If those wolves subsequently cause conflicts with livestock or other human activities, the States would be limited in

the management or control actions that they could undertake to address the conflict.

Response—We have delineated this DPS boundary to be based solely on the wolf population in the Western Great Lakes. Suggestions to enlarge the DPS to include the locations of all known dispersers from this recovered population are not practical for several reasons. It is not possible to predict where additional long-distance dispersers will turn up. Attempting to lay out the DPS boundary so that it circumscribes all future Midwest dispersers would require either an unacceptably large DPS, or making a series of future outward boundary adjustments to reflect new dispersal locations as they occur.

Upon request we will work with the States where the gray wolf retains endangered status to identify and pursue options to deal with wolf-human conflicts that may arise there. We also point out that the Act's implementing regulations for endangered wildlife specifically allow a person to take an endangered wolf ''in defense of his own life or the lives of others'' (50 CFR 17.21(c)(3)) and provide that employees or agents of the Service, other Federal land management agencies, and State conservation agencies may take an endangered wolf that is ''a demonstrable but nonimmediate threat to human safety.'' (50 CFR 17.21(c)(3)(iv)).

Issue 8—One comment stated that the DPS should not include small areas of northern Indiana and Ohio and instead the DPS should end at the southern border of Michigan.

Response—We believe the use of I–80 is preferable to the State line for several reasons. First, the interstate highway more clearly identifies the terminus of the DPS on the ground, making it easier for an individual or for law enforcement agents to determine the legal status of a wolf in the field. Second, this major interstate highway will serve as a partial barrier to wolf dispersal out of the DPS. Therefore, this boundary makes it less likely that these two States will have to deal with dispersing gray wolves that are protected as endangered within their state. Neither State has requested the proposed boundary be modified.

Issue 9—The DPS should not include areas of suitable habitat that lack wolf packs. The DPS should not include any areas that lack wolf packs.

Response—We have identified the DPS to be closely tied to the biological wolf population that has been recovered, and to be consistent with the two relevant court rulings (*Defenders of Wildlife* v. *Norton*, 03–1348–JO, D. OR. 2005; *National Wildlife Federation* v. *Norton*, 1:03–CV–340, D. VT. 2005). Wolf biology makes it unreasonable to define a wolf population, and hence a wolf DPS, solely as the area where wolf packs are present at viable levels. Any area that hosts wolf packs also is producing a substantial number of dispersing wolves, some of which return after short absences, while others travel farther and some never return. Delineation of a wolf population must recognize and account for this dispersal behavior to some degree. We believe our DPS delineation is appropriately based on the biological features of the species and the nature of a wolf population by being centered around the focal areas of the recovery program, but also including a reasonable portion of those wolves making longer distance movements from their natal areas.

We have included nearby areas that are likely to be visited by wolves that have dispersed from the core recovery areas because we believe these wolves should be considered part of that biological population while they are within a reasonable distance from the core areas. The areas of potentially suitable habitat that are currently unoccupied are relatively small, and even if occupied in the future, will not make a significant contribution to the long-term viability of the gray wolf population in the DPS or in the United States. Additionally, wolves that ultimately occupy the NLP will have dispersed from the UP, so we believe the NLP should be included within the WGL DPS.

Issue 10—One comment stated that other gray wolf DPSs should be proposed and identified simultaneously. Piecemeal identification of DPSs and de-listing thwarts the intent of both the vertebrate population policy and the Act.

Response—While in some situations it may be appropriate to identify multiple DPSs simultaneously, there is no requirement in the Act or the DPS Policy to do so. The Service lists or delists species when data are available that supports a decision that best serves the conservation of the taxon. As mentioned above, on December 12, 2008, a formal opinion was issued by the Solicitor for the Department of the Interior, ''U.S. Fish and Wildlife Service Authority Under Section 4(c)(1) of the ESA to Revise Lists of Endangered and Threatened Species to 'Reflect Recent Determinations' '' (U.S. DOI 2008) and fully supports the Secretary's actions in this final rule. The complete text of the Solicitor's formal opinion can be found at *http://www.fws.gov/midwest/wolf/*.

Issue 11—Several commenters expressed the concern that delisting the WGL DPS will eliminate the possibility of wolf recovery in the northeastern United States.

Response—Following this delisting, gray wolves in the northeastern states will retain their classification as endangered under the Act, thereby preserving the possibility of efforts to restore the gray wolf to that region. It also preserves the Federal protections of the Act that would aid gray wolf restoration actions in the northeastern United States if undertaken by State or tribal agencies, and it protects gray wolves immigrating from Canada.

Issue 12—The Service must consider gray wolf subspecies when constructing DPS boundaries, and a DPS cannot include portions of the historical range of two subspecies (*C. lupus lycaon* and *C. l. nubilus*) within its boundary.

Response—The gray wolf entity that has been protected by the Act since 1978 is the species *C. lupus* in the United States and Mexico, rather than a subspecies of the gray wolf. This DPS creates a subunit of the species listing, thereby indicating that the population of the species within this geographical boundary has been recovered. It makes no reference to any gray wolf subspecies. Because the listed entity is the gray wolf, creating a DPS from a portion of the listed entity does not create or require a nexus with subspecies taxonomy.

Issue 13—Several comments suggested that a separate species of wolf may be present in the Upper Peninsula and should be recognized and protected by the Service.

Response—There are several scientific hypotheses regarding the identity of large canids in the eastern United States and adjacent Canada. One of these hypotheses suggests that the wolves in southeastern Ontario are a separate wolf species being referred to as the ''eastern wolf'' and tentatively given the scientific name *Canis lycaon*. If southeastern Ontario wolves are this separate species, those wolves may have contributed their genetic material to the wolf population in the UP via movement westward across the St. Mary's River. However, we believe the UP wolf population primarily developed from Minnesota and Wisconsin wolves that made overland movements into the UP from the west, and that wolf immigration across the St. Mary's River from the east was of much smaller magnitude. At this point there have been no published or peer-reviewed studies of the genetic makeup of UP wolves. Therefore, we will continue to consider WGL wolves to be *C. lupus*.

Issue 14—One comment applied the meaning of significance (using examples of unique ecological setting and differences in genetic characteristics) as used in our 1996 DPS Policy (61 FR 4725, Feb. 7, 1996) to the usage of ''significant'' in ''significant portion of its range'' as the phrase is used in the definitions of endangered and threatened in paragraphs 3(6) and 3(19), respectively. As a result, the comment concludes that we have not applied the DPS Policy's examples of significance during our analysis of whether wolves have been recovered to a sufficient area of the DPS.

Response—These two uses of significant/significance are context-specific, do not have the same meaning, and should not be used interchangeably. When applying the DPS policy, we are required to evaluate whether the discrete group of animals under consideration is sufficiently important to the overall taxon so that it warrants a separate listing under the Act—that is, is the population *significant* to the overall taxon. In contrast, when applying the definitions of endangered and threatened to a taxon, we are considering whether a certain area is important to that same taxon. Another way of explaining the difference is that in one case we are evaluating the importance of a group of organisms; in the other case we are assessing the value of a portion of geographic range. The evaluations are not comparable and are dependent on different factors. Therefore, we believe we are correct in our usage of these terms in this rule.

Issue 15—Wolves remain extirpated in approximately 60 percent of the DPS. This is a significant portion of the range (SPR) within the DPS; therefore, wolves remain endangered in the DPS.

Response—The determination of whether a portion of a species' range is ''significant'' is based on the biological needs of the species and the threats to the species. In making this determination we consider the quality, quantity, and distribution of suitable habitat, the use, uniqueness, and importance of the habitat, and other biological factors appropriate to the species and area under consideration. We do not focus solely, or even primarily, on a quantitative assessment, because quantity of range might have no relationship to the biological needs of the species. In the case of the gray wolf, the portions of North Dakota, South Dakota, Iowa, Illinois, Indiana, and Ohio within the WGL DPS are not significant portions of the range even though they may be sizeable pieces of historical range. These areas contain wolf habitat that is severely degraded at best, and even if they remained listed as endangered, they would not be likely to develop viable wolf populations in the foreseeable future. These areas thus are not important to the gray wolf metapopulation in Minnesota, Wisconsin, and the Upper Peninsula of Michigan. Similarly, the areas of Minnesota, Wisconsin, and Michigan that currently are unoccupied by wolves contain only small areas of potentially suitable habitat, mostly in the NLP of Michigan, and eventual wolf pack occupancy of these areas will have minimal influence on the viability of the current recovered wolf populations in the three States. Consequently, these areas have minimal biological significance to the conservation status of gray wolves in the DPS, and they are not an SPR within the DPS.

Issue 16—The Service must consider the historical range of the gray wolf, rather than the currently occupied range, when assessing what is a ''significant part of the range'' as that phrase is used in the definitions of endangered and threatened species.

Response—For the purposes of this rule, and for determining the significant portion of the range of the gray wolf in the DPS, the Service considers the range of the gray wolf to be the entire geographical area delineated by the WGL DPS. We have clarified this in the final rule.

Issue 17—One comment stated that a rangewide recovery plan is required by the Act before any wolf delisting actions can occur.

Response—The Service has developed, implemented, and revised, as needed, three geographically based recovery plans for the gray wolf. The Act requires that we develop and implement recovery plans for listed species unless they ''will not promote the conservation of the species * * *'' (section 4(f)(1)). In its 2005 ruling, the Vermont District Court specifically commented on this issue, finding that the Service's use of ''three recovery plans for the gray wolf rather than one comprehensive plan must be afforded *Chevron* deference, and is therefore an appropriate agency course of action'' (*National Wildlife Federation* v. *Norton*, 1:03–CV–340, D. VT. 2005, p. 28).

Issue 18—A comment letter stated that the Act does not permit the creation of a WGL DPS (and Northern Rocky Mountain DPS) while maintaining the pre-existing species listing across the remaining 48 States.

Response—We believe this approach of creating a small DPS reflects the recovered status of wolves in the DPS and is consistent with the 2005 rulings (*Defenders of Wildlife* v. *Norton,* 03–1348–JO, D. OR 2005; *National Wildlife Federation* v. *Norton,* 1:03–CV–340, D. VT. 2005). The Vermont ruling stated ''Nowhere in the ESA is the Secretary prevented from creating a 'non-DPS remnant', especially when the remnant area was already listed as endangered'' (*National Wildlife Federation* v. *Norton,* 1:03–CV–340, D. VT. 2005, p. 20). Our current identification of a WGL DPS, while retaining the remaining 48-state and Mexico gray wolf listing intact as endangered, is consistent with this aspect of the District Court's ruling.

Issue 19—The Service cannot delist the DPS because the gray wolf remains extirpated from 95 percent of its historical range.

Response—We have clarified in this final rule that we are only delisting the gray wolf in the WGL DPS; we are not delisting the gray wolf across its historical range in the 48 coterminous States and Mexico. We have considered only whether the gray wolf is threatened or endangered within this DPS.

Issue 20—The DPS can only delist wolves in the core recovery areas, rather than include and delist dispersing animals from those areas.

Response—A critical component of delineating the boundaries of a DPS is gaining an understanding of the population/metapopulation that is being identified as a DPS. Wolf biology clearly shows that temporary and permanent movements beyond the pack's territory are a key element of wolf population dynamics, and as such, these movements must be considered when delineating a boundary for a DPS. Furthermore, a biologically based DPS boundary cannot follow the edge of the fully occupied core areas, as this comment seems to advocate. Individual wolves would be constantly moving back and forth across such a boundary, and pack territories may form on both sides of the line in some years, and might disappear from one or both sides in subsequent years, depending on a number of physical, biological, and societal factors. We determined that the DPS boundary should recognize and accommodate the normal behavior of the population/metapopulation members.

Issue 21—The Service did not use wolf dispersal data as claimed, because wolves disperse outside of the proposed DPS boundary.

Response—In the proposed rule we did not attempt to include the locations of all known dispersing MN/WI/MI wolves within the proposed DPS, or to use the maximum known gray wolf dispersal distance to delineate the DPS boundary. We have provided further

clarification in this final rule on the biological method we have used.

Issue 22—The DPS must contain a uniform biotype (the Laurentian Mixed Forest Province), or the DPS boundaries must be based on biotype or habitat boundaries, because this is what makes the WGL wolves ''significant.''

Response—A number of factors contributed to our determination that the WGL DPS was significant, only one of which included occupancy of these in the Laurentian Mixed Forest Province. However, even if the only factor contributing to ''significance'' was the Laurentian Mixed Forest Province, the DPS boundaries would not use (nor is there a requirement to use) that habitat or biotype as the boundary. As discussed in the rule, many factors concerning wolf biology were considered in identifying the WGL DPS. Limiting the DPS to one habitat type would not make sense biologically for this species.

Issue 23—Highways I–80 and the Missouri River cannot be used for DPS boundaries, because wolves cross them, making them arbitrary choices.

Response—In our proposal we described Interstate 80 and the Missouri River as being ''partial barriers,'' and we cited data showing they have been crossed by a small number of wolves (p. 15277). We did not use these features to identify the discreteness of the wolf population within the WGL DPS. Rather, we use them as readily identifiable features on the landscape that are in a biologically appropriate location for use in delineating the DPS, and they are also partial barriers to wolf movements.

Issue 24—The 1992 Service Recovery Plan is outdated, and its recovery criteria cannot be used to justify delisting.

Response—When wolf numbers in the Midwest appeared to be approaching the recovery criteria specified in the 1992 Plan, we reconvened the Recovery Team in 1997 to query them regarding the appropriateness of those criteria. The Team expressed confidence that the recovery criteria remained ''necessary and sufficient'' (Peterson in litt. 1997, in litt. 1998). Furthermore, the peer reviewers overwhelmingly supported our conclusion that the WGL DPS wolves have recovered, and they expressed no concern with the 1992 recovery criteria that were used as part of our determination.

The population goals in the 1992 Recovery Plan are not the sole determinants of whether delisting is appropriate. While the Act states that recovery plans shall contain ''objective, measurable criteria'' (sec. 4(f)(1)(B)(ii)) when practicable, achieving these criteria alone cannot result in a delisting. Rather, recovery criteria are important indicators that identify the need for consideration of delisting. The consideration of delisting is a broad review of the past, current, and likely future threats to the species, as required by the Act. The delisting decision is made based on the threats assessment, and the resulting determination of whether the species meets the Act's definition of threatened or endangered.

Issue 25—One commenter stated that increasing use of off-highway vehicles (OHV) in Minnesota and growing human populations pose serious threats to wolves, especially in the core of Minnesota's wolf range. The commenter pointed out that most of primary wolf range (e.g., Management Zone A) (MN DNR 2001, Appendix III) is north of Highway 2 and that trails in these forests may be subject to few limitations to motorized use.

Response—As discussed in ''Suitable Habitat in the Western Great Lakes Gray Wolf DPS'' road density has largely been accepted as the best single predictor of habitat suitability in the Midwest due to the connection between roads and human-related wolf mortality. Off-highway vehicle trails introduce only a portion of the impacts and risk factors associated with roads, such as increased human access to areas occupied by wolves and increased likelihood of unauthorized shooting or trapping. Off-highway vehicle trails do not introduce significant levels of the other risk factors, such as more farms and residences, more domestic animals, a greater likelihood of mortality due to livestock-depredation control or vehicle collisions, and increased likelihood of disease transmission from domestic dogs. Therefore, we believe wolf populations are more sensitive to normal road infrastructure density than to OHV trail density.

MN DNR is developing recommendations for motorized use of State forest lands. In preparation for this analysis, it completed an inventory in 2004 of all State forest roads and access routes on State, county, and Federal lands within State forest boundaries—a total of 5.7 million acres. (MN DNR 2005). This inventory found an overall route density of 0.8 km per km^2, but did not differentiate between motorized and non-motorized trails (routes). MN DNR is now conducting a forest-by-forest review and proposing which roads and trails will be available for motor vehicle use. As of September 2006, MN DNR had completed reviews on 16 State forests and had closed approximately 57 percent of routes to motorized use. If this trend continues, the density of routes open to motorized use in Minnesota State forests (State forest roads and OHV trails) may approximate 0.5 km per km^2. Only 3 of the 16 forests reviewed thus far, however, are north of Highway 2 and all were either completely closed to motorized use or given a ''Limited'' use designation. As the department begins to evaluate larger, more remote northern forests, however, this trend (i.e., about 50 percent closure) may change and some forests may retain the ''managed'' classification (i.e., open unless posted closed, *OHV trail designation questions and answers,* MN DNR Division of Trails and Waterways, St. Paul, MN; *http://www.dnr.state.mn.us/input/mgmtplans/ohv/designation/index.html.*

According to the commenter, registered ATVs in Minnesota increased from 32,501 in 1990 to 266,283 in 2004. Although this is a sharp increase, the wolf population in Minnesota grew and, more recently, may have stabilized at about 3,020 wolves (Erb and Benson 2004, Table 1) during this time. Therefore, there is no clear relationship between OHV use and wolf abundance statewide. Nevertheless, we agree that the combination of growing human populations and extensive use of OHV's warrants careful monitoring and regulation to ensure that wolf populations are not adversely affected. Minnesota's wolf management plan states that ''in areas of sufficient size to sustain one or more wolf packs, land managers should be cautious about adding new road access that could exceed a density of one mile of road per square mile of land, without considering the potential effect on wolves'' (MN DNR 2001, p. 29). We expect MN DNR to continue to also consider human densities when monitoring the extent and distribution of suitable wolf habitat in the State and to take necessary actions (e.g., decreasing road density in State forests) to maintain a population of at least 1,600 gray wolves if increases in human density erode the extent of suitable habitat such that the population falls below this level.

Issue 26—A commenter pointed out that increasing volume of automobile traffic in Minnesota's wolf range will fragment habitat, increase wolf mortality, destroy habitat, displace wolves, and contribute to urban sprawl. Four examples were provided.

Response—It is clear that automobiles kill wolves on roads and highways and that wolves tend to avoid these features relative to road-free areas (Whittington *et al.* 2004, pp. 9-11; Whittington *et al.* 2005, pp. 549-551), but highways are far from absolute barriers to dispersal. For

example, in a study of U.S. Highway 53 in northwest Wisconsin (4,700 vehicles per day) in the late 1990's, Kohn *et al.* (2000, p. 2) found that 12 of 13 radio-collared wolves that encountered the highway successfully crossed it, some of them multiple times, and that each of these dispersing wolves subsequently became dominant members of packs in newly established territories. In addition, the successful reestablishment of wolves in Wisconsin and Michigan depended on a sufficient number of Minnesota wolves crossing Interstate Highway 35 where current average traffic volumes are greater than 15,000 vehicles per day (*http://www.dot.state.mn.us/tda/maps/trunkhighway/2004/state_and_metro/stateflo.pdf*. Wolf crossing of roads, however, is dependent on adjacent human development and habitat fragmentation, and land managers can likely influence the ability of wolves to disperse across highways in Minnesota's wolf range by ensuring that sufficient road reaches occur in areas with high crossing potential (i.e., low fragmentation of adjacent habitat due to open or developed areas; Frair 1999, pp. 19–20).

Issue 27—Disease remains a serious threat and post-delisting disease monitoring is inadequate or unfunded. One comment states that the Michigan Plan only commits the DNR to monitor wolf health until the State wolf population reaches 200 wolves.

Response—The expectation in the 1997 Michigan Wolf Plan was that Federal wolf delisting would occur before the State reached its own minimum goal of 200 wolves. As a result, the plan states that wolf monitoring, including health and disease monitoring, would continue ''at least until the minimum population sustainable population goal [of 200] is met.'' (MI DNR 1997, p. 21.) However, the 1997 Michigan Plan also states that wolf health and disease monitoring will occur ''for a minimum of five years after Federal delisting'' (MI DNR 1997 p. 21–22, 45). In fact, wolf health and disease monitoring has continued well beyond the attainment of the 200-wolf threshold, which occurred in early 1996. We believe the commenters' fear that wolf health and disease monitoring will cease upon delisting is unwarranted by the facts or by the State Plan.

Issue 28 —The delisting should be delayed, or should be done in a manner to promote wolf expansion into the NLP.

Response—We believe the gray wolf has achieved recovery in the DPS and is no longer threatened or endangered. Therefore, it should be delisted with management returning to the States and tribes. Those governments and their constituents will determine if additional wolf recovery will be promoted. We will consider providing technical assistance to further State or tribal wolf recovery efforts if requested.

Issue 29 —Human predation poses too high a risk to delist the wolf. The wolf cannot be delisted ''until this threat has been adequately controlled.''

Response—Our detailed review of the past, current, and likely future threats to wolves within the WGL DPS identified human-caused mortality of all forms to constitute the majority of documented wolf deaths. However, the wolf populations in Wisconsin and Michigan have continued to expand in numbers and the Minnesota wolf population is at least maintaining itself at well over the population goal recommended in the 1992 Recovery Plan and at about twice the minimum level established in the 2001 Minnesota Wolf Plan. Healthy wolf populations clearly can withstand a high level of mortality, from human and other causes, and remain viable. Although the commenters do not provide any clarification on what is meant by ''adequately controlled'' we believe that for purposes of this delisting decision, the numerical growth and range expansion shown by WGL DPS wolves indicates that ''adequate control'' already exists since the species is being maintained at healthy levels.

Issue 30—WGL DPS wolves should be reclassified to threatened instead of delisted. Another comment stated that only Minnesota wolves should be delisted now.

Response—Minnesota wolves were classified as threatened in 1978. The Act does not require endangered species to first be moved to threatened status before delisting, but for some species that intermediate step is appropriate. The WGL DPS wolf metapopulation has continued to increase to the extent that it greatly exceeds our recovery criteria, and it has exceeded our numerical delisting criteria since 1999. Therefore, we believe delisting is appropriate for this DPS.

Issue 31—It will be difficult to relist these wolves if it becomes necessary following delisting.

Response—The Act requires that we monitor the status of a delisted species for at least five years after delisting. Section 4(g) of the Act authorizes the Service to make prompt use of our emergency listing authority under section 4(b)(7) to prevent a significant risk to the well-being of any recovered species. Therefore, we believe the Act provides the authority and the requirement to relist midwestern gray wolves if necessary.

Issue 32—A large number of comments recommended that specific changes be made to the three State wolf management plans.

Response—We have reviewed the 2001 Minnesota Plan, the 1999 and 2006 Updated Wisconsin Plan, and the 1997 Michigan Plan. We reviewed these plans to determine if they will provide sufficient protection and reduce threats. We are primarily concerned with the outcome of the plan's implementation. Once a species is delisted, the details of its management are a State or tribal responsibility; the Federal responsibility is to monitor the plan's implementation and the species' response for at least five years to ensure that the plan's outcome is as expected. We have concluded that each plan provides adequate protection for wolves, and will keep threats at a sufficiently low level, so that the WGL DPS wolves will not become threatened or endangered in the foreseeable future. Suggestions for changes to the State wolf management plans should be directed to the respective State management agency for consideration.

Issue 33 —Wisconsin and Michigan DNR have not completed their wolf management plans, so delisting should be delayed until after those plans are completed and they are shown to be adequate.

Response—The Wisconsin DNR did not revise its 1997 Wolf Management Plan. Instead, the plan has had some portions of the text updated, and several appendices have been added to deal with new public opinion data and a 2004 DNR questionnaire. The Plan's management goal of 350 wolves and the vast majority of management practices remain unchanged. We received the updated Wisconsin Wolf Management Plan Addendum 2006 in time to evaluate it as part of our delisting decision.

The 1997 Michigan Wolf Management Plan is in the midst of revision. The process for its revision includes obtaining recommendations in the form of ''guiding principles'' from a roundtable group composed of diverse stakeholders, and it will not be completed until late in 2007. In the meantime, the 1997 Michigan Plan will remain in effect, as supplemented by additional guidance developed since 1997 to deal with aspects of wolf management and recovery not adequately covered in the 1997 Plan, such as ''Guidelines for Management and Lethal Control of Wolves Following Confirmed Depredation Events'' (MI DNR 2005a).

Issue 34—The delisting decision is based on the assumption that the State wolf management plans will be fully implemented after Federal delisting.

Response—We are required to evaluate the likely future threats that a delisted wolf population will experience. We rely heavily on the State wolf management plans for our assessment of the degree of protection and monitoring that will occur after Federal delisting. Because these plans have received the necessary approvals within the State governments, we believe it is reasonable to assume the plans will be funded and implemented largely as written. Wisconsin and Michigan DNRs have led the efforts to restore wolves to their States for several decades, including a 1974 reintroduction effort initiated by Michigan DNR (Weise *et al.* 1975). Based on their proven leadership in Midwest wolf recovery, we see no reason to doubt the continuing commitment of these State agencies to wolf conservation.

We recognize that State wolf plans can be changed by the respective DNR or State legislature, creating some uncertainty regarding plan implementation. However, given the high public visibility of wolf management, the extent of public interest and involvement in the development and updating of the States' plans, the vast amount of scientific data available regarding wolf management, and the status monitoring that we will be maintaining for the next five years, we believe it is reasonable and proper to assume that the three State wolf plans will not be significantly changed, nor will their implementation be critically underfunded, in a manner that would jeopardize the viability of any State's wolf population. If this assumption turns out to be incorrect, we have the ability to relist the species, including an emergency relisting, if necessary.

Issue 35—Many comments expressed distrust for State wolf protection, based on past State programs aimed at wolf eradication.

Response—We acknowledge the past involvement of State and Federal government agencies in intensive, and largely successful, programs to eradicate wolves. However, we believe that public sentiment and agency mandates have changed dramatically since the 1960s and earlier. While wolf eradication might still be the wish of a small number of individuals, we believe there is broad support among the public and within governmental agencies to allow wolves to occupy our landscape, with some degree of management imposed to maintain control of the level of wolf-human conflicts. Based on existing State laws and State management plans, we will rely upon the States to provide sufficient protection to wolves until and unless it is shown they are unwilling or unable to do so.

Issue 36—The Post-Delisting Monitoring (PDM) Plan should be completed before delisting occurs.

Response—The Act requires a minimum of five years of PDM. There is no requirement that a PDM plan be completed before delisting. We are working on a PDM plan, utilizing the expertise of the Recovery Team, and we expect to complete the plan shortly. Because past wolf monitoring by the States has been successful and adequate to document progress toward recovery, we expect that PDM will be similar to recovery monitoring. The PDM plan will organize data-gathering more than has been done in the past, and it will identify the Service office that will be responsible for initiating the data gathering and coordinating the data review.

Issue 37—Several commenters stated that the Service must ensure that State wolf management strategies accommodate tribal interests within reservation boundaries as well as honor the tribal role and authority in wolf management in the ceded territories. Furthermore, the Federal trust responsibility, as it pertains to wolf management, must be continued after delisting. They asked how, and by whom, that Federal trust responsibility will be continued after the Act no longer provides the authority for the Service to protect wolves.

Response—The Service and the Department of the Interior recognize the unique status of the federally recognized tribes, their right to self-governance, and their inherent sovereign powers over their members and territory. The Department, the Service, the Bureau of Indian Affairs (BIA), and other Federal agencies, as appropriate, will take the needed steps to ensure that tribal authority and sovereignty within reservation boundaries are respected as the States implement their wolf management plans and revise those plans in the future. Furthermore, there may be tribal activities or interests associated with the wolf encompassed within the tribes' retained rights to hunt, fish, and gather in treaty-ceded territories. The Department will assist in the exercise of those rights. If biological assistance is needed, the Service may provide it via our field offices. The Service will remain involved in the post-delisting monitoring of the gray wolf, but all Service management and protection authority under the Act will end with this delisting. Legal assistance will be provided to the tribes by the Department of the Interior, and the BIA will be involved, when needed.

Summary of Factors Affecting the Species

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

A recovered species is one that no longer meets the Act's definition of threatened or endangered. Determining whether a species is recovered requires consideration of the same five categories of threats specified in section 4(a)(1). 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 after its delisting and the consequent removal of the Act's protections.

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 WGL 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 recovery 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. Also, the States have had a solid history of cooperating and assisting in wolf recovery and have made a commitment, through legislative actions, to continue these activities. We believe this

commitment will continue. When evaluating the available information, with respect to the foreseeable future, we take into account reduced confidence as we forecast further into the future.

A species is ''endangered'' for purposes of the Act 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 following describes how we interpret the terms ''range'' and ''significant'' as used in the phrase ''significant portion of its range,'' and explains the bases for our use of those terms in this rule. 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). Our explanation below is consistent with that opinion.

''Range''

The word ''range'' in the phrase ''significant portion of its range'' refers to the range in which a species currently exists, not to the historical range of the species where it once existed. The context in which the phrase is used is crucial. Under the Act's definitions, a species is ''endangered'' only if it ''is in danger of extinction'' in the relevant portion of its range. The phrase ''is in danger'' denotes a present-tense condition of being at risk of a future, undesired event. To say that a species ''is in danger'' in an area that is currently unoccupied, such as unoccupied historical range, would be inconsistent with common usage. Thus, ''range'' must mean ''currently-occupied range,'' not ''historical range.'' This interpretation of ''range'' is further supported by the fact that section 4(a)(1)(A) of the Act requires us to consider the ''present'' or ''threatened'' (i.e., future), rather than the past, ''destruction, modification, or curtailment'' of a species' habitat or range in determining whether a species is endangered or threatened.

However, the Ninth Circuit Court of Appeals appeared to conclude, without any analysis or explanation that the ''range'' referred to in the SPR phrase includes the historical range of the species. The court stated that a species ''can be *extinct* 'throughout * * * a significant portion of its range' if there are major geographical areas in which it is no longer viable but once was,'' and then faults the Secretary for not ''at least explain[ing] her conclusion that the area in which the species can no longer live is not a significant portion of its range.'' *Defenders of Wildlife* v. *Norton,* 258 F.3d 1136, 1145 (emphasis added). This would suggest that the range we must analyze in assessing endangerment includes unoccupied historical range—i.e., the places where the species was once viable but no longer exists.

The statute does not support this interpretation. This interpretation is based on what appears to be an inadvertent misquote of the relevant statutory language. In addressing this issue, the Ninth Circuit states that we must determine whether a species is ''extinct throughout * * * a significant portion of its range.'' *Id.* If that were true, we would have to study the historical range. But that is not what the statute says, and the Ninth Circuit quotes the statute correctly elsewhere in its opinion. Under the Act, we are not to determine if a species is ''extinct throughout * * * a significant portion of its range,'' but are to determine if it ''is in danger of extinction throughout * * * a significant portion of its range.'' A species cannot presently be ''in danger of extinction'' in that portion of its range where it ''was once viable but no longer is''—if by the latter phrase the court meant lost historical habitat. In that portion of its range, the species has by definition ceased to exist. In such a situation, it is not ''in danger of extinction''; it is extinct.

Although we must focus on the range in which the species currently exists, data about the species' historical range and how the species came to be extinct in that location may be relevant in understanding or predicting whether a species is ''in danger of extinction'' in its current range and therefore relevant to our 5 factor analysis. But the fact that it 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 notice, we consider the range of the gray wolf to be the entire geographical area delineated by the boundaries of the WGL DPS.

''Significant''

The Act does not clearly indicate what portion(s) of a species' range should be considered ''significant.'' Most dictionaries list several definitions of ''significant.'' For example, one standard dictionary defines ''significant'' as ''important,'' ''meaningful,'' ''a noticeably or measurably large amount,'' or ''suggestive'' (Merriam-Webster's Collegiate Dictionary 1088 10th ed. 2000). If it means a ''noticeably or measurably large amount,'' then we would have to focus on the size of the range in question, either in relation to the rest of the range or perhaps even in absolute terms. If it means ''important,'' then we would have to consider factors in addition to size in determining a portion of a species' range is ''significant.'' For example, would a key breeding ground of a species be ''significant,'' even if it was only a small part of the species' entire range?

One district court interpreted the term to mean ''a noticeably or measurably large amount'' without analysis or any reference to other alternate meanings, including ''important'' or ''meaningful.'' *Defenders of Wildlife* v. *Norton,* 239 F. Supp. 2d 9, 19 (D.D.C. 2002). We consider the court's interpretation to be unpersuasive, because the court did not explain why we could not employ another, equally plausible definition of ''significant.'' It is impossible to determine from the word itself, even when read in the context of the entire statute, which meaning of ''significant'' Congress intended. Moreover, even if it were clear which meaning was intended, ''significant'' would still require interpretation. For example, if it were meant to refer to size, what size would be ''significant'': 30 percent, 60 percent, 90 percent? Should the percentage be the same in every case or for each species? Moreover, what factors, if any, would be appropriate to consider in making a size determination? Is size all by itself ''significant,'' or does size only become ''significant'' when considered in combination with other factors? On the other hand, if ''significant'' were meant to refer to importance, what factors would need to be considered in deciding that a particular portion of a species' range is ''important'' enough to trigger the protections of the Act?

Where there is ambiguity in a statute, as with the meaning of ''significant,'' the agency charged with administering the statute, in this case the Service, has broad discretion to resolve the ambiguity and give meaning to the term. As the Supreme Court has stated:

> In *Chevron,* this Court held that ambiguities in statutes within an agency's jurisdiction to administer are delegations of authority to the agency to fill the statutory gap in reasonable fashion. Filling these gaps, the Court explained, involves difficult policy choices that agencies are better equipped to make than courts. If a statute is ambiguous, and if the implementing agency's construction is reasonable, *Chevron* requires a federal court to accept the agency's construction of the statute, even if the agency's reading differs from what the court believes is the best statutory interpretation.

Nat'l Cable & Telecomms. Ass'n v. *Brand X Internet Servs.,* 545 U.S. 967, 980 (2005) (internal citations omitted).

We have broad discretion in defining what portion of a species' range is ''significant.'' No ''bright line'' or ''predetermined'' percentage of historical range loss is considered ''significant'' in all cases, and we may consider factors other than simply the size of the range portion in defining what is ''significant.'' In light of the general ecosystems conservation purposes and findings in section 2 of the Act, our goal is to define ''significant'' in such a way as to insure the conservation of the species protected by the Act. In determining whether a range portion is significant, we consider the ecosystems on which the species that use that range depend as well as the values listed in the Act that would be impaired or lost if the species were to become extinct in that portion of the range or in the range as a whole.

However, our discretion in defining ''significant'' is not unlimited. The Ninth Circuit Court of Appeals, while acknowledging that we have ''a wide degree of discretion in delineating'' what portion of a range is ''significant,'' appeared to set outer limits of that discretion. *See Defenders of Wildlife* v. *Norton,* 258 F.3d 1136. On the one hand, it rejected what it called a quantitative approach to defining ''significant,'' where a ''bright line'' or ''predetermined'' percentage of historical range loss is considered ''significant'' in all cases. 258 F.3d. at 1143. As the court explained:

> First, it simply does not make sense to assume that the loss of a predetermined percentage of habitat or range would necessarily qualify a species for listing. A species with an exceptionally large historical range may continue to enjoy healthy population levels despite the loss of a substantial amount of suitable habitat. Similarly, a species with an exceptionally small historical range may quickly become endangered after the loss of even a very small percentage of habitat.

The Ninth Circuit concluded that what is ''significant'' must ''necessarily be determined on a case by case basis,'' and must take into account not just the size of the range but also the biological importance of the range to the species. 258 F.3d. at 1143. At the other end of the spectrum, the Ninth Circuit rejected what it called ''the faulty definition offered by the Secretary,'' a definition that holds that a portion of a species' range is ''significant'' only if the threats faced by the species in that area are so severe as to threaten the viability of the species as a whole. 258 F.3d. at 1143, 1146. It thus appears that within the two outer boundaries set by the Ninth Circuit, we have wide discretion to give the definitive interpretation of the word ''significant'' in the phrase significant ''portion of its range.''

Based on these principles, we consider the following factors in determining whether a portion of a range is ''significant''—quality, quantity, and distribution of habitat relative to the biological requirements of the species; the historical value of the habitat to the species; the frequency of use of the habitat; the uniqueness or importance of the habitat for other reasons, such as breeding, feeding, migration, wintering, or suitability for population expansion; genetic diversity; and other biological factors. We focus on portions of a species' range that are important to the conservation of the species, such as ''recovery units'' identified in approved Section 4 recovery plans; unique habitat or other ecological features that provide adaptive opportunities that are of conservation importance to the species; and ''core'' populations that generate additional individuals of a species that can, over time, replenish depleted populations or stocks at the periphery of the species' range. We do not apply the term ''significant'' to portions of the species' range that constitute less-productive peripheral habitat, artificially-created habitat, or areas where wildlife species have established themselves in urban or suburban settings—such portions of the species' range are not ''significant,'' in our view, to the conservation of the species in the wild.

Determining the SPR for the WGL DPS of the gray wolf is based on the biological needs of the species in the DPS. As discussed previously in our proposed WGL wolf rule (71 FR 15266–15305; March 27, 2006), wolves are highly adaptable habitat generalists, and their primary biological need is an adequate natural prey base of large ungulates. The primary current and likely future threats to wolves are excessive human-caused mortality and increased mortality from diseases and parasites. Therefore, our determination of the SPR for the WGL DPS of the gray wolf is primarily based on the portion of the DPS that provides an adequate wild prey base, suitably low levels of human-caused mortality, and sufficient representation, resiliency, and redundancy to buffer the impacts of disease and parasite-induced mortality.

These biological needs, and the threats to gray wolves in the WGL DPS, are discussed in the following paragraphs addressing the five factors specified in section 4(a)(1) of the Act. We describe the necessary characteristics of suitable habitat and the necessary size and distribution of such habitat for it to constitute a SPR in the WGL DPS. Areas of habitat within the range of the gray wolf that are not suitable, or are not of sufficient size or appropriate geographic distribution, are not an SPR of the DPS.

A. The present or threatened destruction, modification, or curtailment of its habitat or range.

A common misperception is that wolves inhabit only remote portions of pristine forests or mountainous areas, where human developments and other activities have produced negligible change to the natural landscape. Their extirpation south of Canada and Alaska, except for the heavily forested portions of northeastern Minnesota, reinforced this popular belief. Wolves, however, survived in those areas not because those were the only places with the necessary habitat conditions, but because only in those remote areas were they sufficiently free of the human persecution that elsewhere killed wolves faster than the species could reproduce (Mech 1995a, p. 271).

In the western Great Lakes region, wolves in the densely forested northeastern corner of Minnesota have expanded into the more agricultural portions of central and northwestern Minnesota, northern and central Wisconsin, and the entire UP of Michigan. Habitats currently being used by wolves span the broad range from the mixed hardwood-coniferous forest wilderness area of northern Minnesota, through sparsely settled, but similar habitats in Michigan's UP and northern Wisconsin, and into more intensively cultivated and livestock-producing portions of central and northwestern Minnesota and central Wisconsin.

Wolf research and the expansion of wolf range over the last three decades have shown that wolves can successfully occupy a wide range of habitats, and they are not dependent on wilderness areas for their survival. In the past, gray wolf populations occupied nearly every type of habitat north of mid-Mexico that contained large ungulate prey species, including bison, elk, white-tailed deer, mule deer, moose, and woodland caribou; thus, wolves historically occupied the entire Midwest. Inadequate prey density or high levels of human-caused mortality appear to be the only factors that limit wolf distribution (Mech 1995a, p. 271; 1995b, p. 544).

Suitable Habitat Within the Western Great Lakes Gray Wolf DPS

Various researchers have investigated habitat suitability for wolves in the central and eastern portions of the United States. In recent years, most of these efforts have focused on using a combination of human density, deer density or deer biomass, and road density, or have used road density alone to identify areas where wolf populations are likely to persist or become established. (Mladenoff *et al.* 1995, pp. 284–285, 1997, pp. 23–27, 1998, pp. 1–8, 1999, pp. 39–43; Harrison and Chapin 1997, p. 3, 1998, pp. 769–770; Wydeven *et al.* 2001a, pp. 110–113; Erb and Benson 2004, p. 2; Potvin *et al.* 2005, pp. 1661–1668).

Road density has largely been adopted as the best predictor of habitat suitability in the Midwest due to the connection between roads and human-related wolf mortality. Several studies demonstrated that wolves generally did not maintain breeding packs in areas with a road density greater than about 0.9 to 1.1 linear miles per sq mi (0.6 to 0.7 km per sq km) (Thiel 1985, pp. 404–406; Jensen *et al.* 1986, pp. 364–366; Mech *et al.* 1988, pp. 85–87; Fuller *et al.* 1992, pp. 48–51). Work by Mladenoff and associates indicated that colonizing wolves in Wisconsin preferred areas where road densities were less than 0.7 mi per sq mi (0.45 km per sq km) (Mladenoff et al 1995, p. 289). However, recent work in the UP of Michigan indicates that in some areas with low road densities, low deer density appears to separately limit wolf occupancy (Potvin *et al.* 2005, pp. 1667–1668) and may prevent recolonization of portions of the UP. In Minnesota a combination of road density and human density is used by MN DNR to model suitable habitat. Areas with a human density up to 8 per sq km are suitable if they also have a road density less than 0.5 km per sq km. Areas with a human density of less than 4 per sq km are suitable if they have road densities up to 0.7 km per sq km (Erb and Benson 2004, p. 2).

Road density is a useful parameter because it is easily measured and mapped, and because it correlates directly and indirectly with various forms of other human-related wolf mortality factors. A rural area with more roads generally has a greater human density, more vehicular traffic, greater access by hunters and trappers, more farms and residences, and more domestic animals. As a result, there is a greater likelihood that wolves in such an area will encounter humans, domestic animals, and various human activities. These encounters may result in wolves being hit by motor vehicles, being controlled by government agents after becoming involved in depredations on domestic animals, being shot intentionally by unauthorized individuals, being trapped or shot accidentally, or contracting diseases from domestic dogs (Mech *et al.* 1988, pp. 86–87; Mech and Goyal 1993, p. 332; Mladenoff *et al.* 1995, p. 282, 291). Based on mortality data from radio-collared Wisconsin wolves from 1979 to 1999, natural causes of death predominate (57 percent of mortalities) in areas with road densities below 1.35 mi per sq mi (0.84 km per sq km), but human-related factors produced 71 percent of the wolf deaths in areas with higher road densities (Wydeven *et al.* 2001a, pp. 112–113).

Some researchers have used a road density of 1 mi per sq mi (0.6 km per sq km) of land area as an upper threshold for suitable wolf habitat. However, the common practice in more recent studies is to use road density to predict probabilities of persistent wolf pack presence in an area. Areas with road densities less than 0.7 mi per sq mi (0.45 km per sq km) are estimated to have a greater than 50 percent probability of wolf pack colonization and persistent presence, and areas where road density exceeded 1 mi per sq mi (0.6 km per sq km) have less than a 10 percent probability of occupancy (Mladenoff *et al.* 1995. pp. 288–289; Mladenoff and Sickley 1998, p. 5; Mladenoff *et al.* 1999, pp. 40–41). Wisconsin researchers view areas with greater than 50 percent probability ''primary wolf habitat,'' areas with 10 to 50 percent probability as ''secondary wolf habitat,'' and areas with less than 10 percent probability as unsuitable habitat (WI DNR 1997, pp. 47–48). The territories of packs that do occur in areas of high road density, and hence with low expected probabilities of occupancy, are generally near broad areas of more suitable habitat that are likely serving as a source of wolves, thereby assisting in maintaining wolf presence in the higher road density, less suitable, areas (Mech 1989, pp. 387–388; Wydeven *et al.* 2001a, p.112). We note that the predictive ability of this model has recently been questioned (Mech 2006a, 2006b) and responded to (Mladenoff *et al.* 2006), and that an updated analysis of Wisconsin pack locations and habitat has been completed and is being prepared for publication (Mladenoff *et al.*, to be submitted).

It appears that essentially all suitable habitat in Minnesota is now occupied, and the wolf population within the State may have slowed its increase or has stabilized (Erb and Benson 2004, p. 7). This suitable habitat closely matches the areas designated as Wolf Management Zones 1 through 4 in the Federal Recovery Plan (USFWS 1992, p. 72), which are identical in area to Minnesota Wolf Management Zone A (*see* Figure 2, below; MN DNR 2001, Appendix III).

Recent surveys for Wisconsin wolves and wolf packs show that wolves have now recolonized the areas predicted by habitat models to have high and moderate probability of occupancy (primary and secondary wolf habitat). The late winter 2005–06 Wisconsin wolf survey identified packs occurring throughout the central Wisconsin forest area (Wolf Management Zone 2, Figure 3) and across the northern forest zone (Zone 1, Figure 3), with highest pack densities in the northwest and north central forest; pack densities are lower, but increasing, in the northeastern corner of the State (Wydeven *et al.* 2006, p. 33).

Michigan wolf surveys in winter 2003–04 and 2004–05 continue to show wolf pairs or packs (defined by Michigan DNR as three or more wolves traveling together) in every UP county except Keweenaw County (Huntzinger *et al.* 2005, p. 6), which probably lacks a suitable ungulate prey base during winter months (Potvin *et al.* 2005, p. 1665).

Such habitat suitability studies in the Upper Midwest indicate that the only large areas of suitable or potentially suitable habitat areas that are currently unoccupied by wolves are located in the NLP of Michigan (Mladenoff *et al.* 1997, p. 23; Mladenoff *et al.* 1999, p. 39; Potvin 2003, pp. 44–45; Gehring and Potter 2005, p. 1239). One published Michigan study (Gehring and Potter 2005, p. 1239) estimates that these areas could host 46 to 89 wolves, while a masters degree thesis investigation estimates that 110–480 wolves could exist in the NLP (Potvin 2003, p. 39). The NLP is separated from the UP by the Straits of Mackinac, whose 4-mile (6.4 km) width freezes during mid- and late-winter in some years. In recent years there have been two documented occurrences of wolves in the NLP (the last recorded wolf in the LP was in 1910), but no indication of persistence beyond several months. In the first instance a radio-collared female wolf from the central UP was trapped and killed by a coyote trapper in Presque Isle County in late October 2004. In late November 2004, tracks from two wolves were verified in the same NLP county. Follow-up winter surveys by the DNR in early 2005 failed to find additional wolf tracks in the NLP (Huntzinger *et al.*

2005, p. 7); additional surveys conducted in February and March 2006 also failed to find evidence of continued NLP wolf presence (Beyer *et al.* 2006, p. 35).

These NLP patches of potentially suitable habitat contain a great deal of private land, are small in comparison to the occupied habitat on the UP and in Minnesota and Wisconsin, and are intermixed with agricultural and higher road density areas (Gehring and Potter 2005, p. 1240). Therefore, continuing wolf immigration from the UP may be necessary to maintain a future NLP population. The Gehring and Potter study (p. 1239) concludes that NLP suitable habitat (i.e., areas with greater than a 50 percent probability of wolf occupancy) amounts to 850 sq mi (2,198 sq km). Potvin, using deer density in addition to road density, believes there are about 3,090 sq mi (8,000 sq km) of suitable habitat in the NLP (Potvin 2003, p. 21). Gehring and Potter exclude from their calculations those NLP low-road-density patches that are less than 19 sq mi (50 sq km), while Potvin does not limit habitat patch size in his calculations (Gehring and Potter 2005, p. 1239; Potvin 2003, pp. 10–15). Both of these area estimates are well below the minimum area described in the Federal Recovery Plan, which states that 10,000 sq mi (25,600 sq km) of contiguous suitable habitat is needed for a viable isolated gray wolf population, and half that area (5,000 sq mi or 12,800 sq km) is needed to maintain a viable wolf population that is subject to wolf immigration from a nearby population (USFWS 1992, pp. 25–26).

Based on the above-described studies and the guidance of the 1992 Recovery Plan, the Service has concluded that suitable habitat for wolves in the WGL DPS can be determined by considering four factors—road density, human density, prey base, and size. An adequate prey base is an absolute requirement, but in much of the WGL DPS the white-tailed deer density is well above adequate levels, causing the other factors to become the determinants of suitable habitat. Prey base is primarily of concern in the UP where severe winter conditions cause deer to move away from some lakeshore areas, making otherwise suitable areas locally and seasonally unsuitable. Road density and human density frequently are highly correlated; therefore, road density is the best single predictor of habitat suitability. However, areas with higher road density may still be suitable if the human density is very low, so a consideration of both factors is sometimes useful (Erb and Benson 2004, p. 2). Finally, although the territory of individual wolf packs can be relatively small, a single, or several, packs are not likely to persist as a viable population if they occupy a small isolated island of otherwise suitable habitat. The 1992 Recovery Plan indicates that a wolf population needs to occupy at least 10,000 contiguous sq mi (25,600 sq km) to be considered viable if it is isolated from other wolf populations, and must occupy at least half that area if it is not isolated from another self-sustaining population (USFWS 1992, pp. 25–26).

In summary, Minnesota Wolf Management Zone A (Federal Wolf Management Zones 1–4, Figure 2), Wisconsin Wolf Zones 1 and 2 (Figure 3), and the Upper Peninsula of Michigan contain suitable wolf habitat. The other areas within the DPS are unsuitable habitat, or are potentially habitat that is too small or too fragmented to be suitable for maintaining a viable wolf population.

Determining the Significant Portion of the Range Within the WGL DPS

The biological values of the various portions of the suitable habitat in the DPS are the important considerations for determining what constitutes SPR. Portions of the range that contribute minimally to the long-term viability of a species are likely to be insignificant, even if those areas constitute geographically large portions of the species' range. On the other hand, a small portion of the range that is necessary for a species' survival (e.g., the nesting areas of a wide-ranging colonially nesting bird) is a significant portion of its range regardless of its size. Significance of portions of the range must be evaluated in a case-by-case context, and not only in a quantitative or theoretical context.

Therefore, in determining the SPR within the WGL DPS we considered the factors listed above. These include the quality, quantity, and distribution of the habitat relative to the biological needs of the species, the need to maintain the remaining genetic diversity, the importance of geographic distribution in coping with catastrophes such as disease, the ability of the habitat to provide adequate wild prey, and the need to otherwise meet the conservation needs of the species.

It is generally recognized that Minnesota, Wisconsin, and Michigan provide the only sufficiently large areas in the Midwest having an adequate wild ungulate prey base and low road and human density for this DPS (USFWS 1992, pp. 56–58). Based on the biology of the gray wolf, threats to its continued existence, and conservation biology principles, the federal Recovery Plan specifies that two populations (or what equates to a single metapopulation) are needed to ensure long-term viability (*see* Recovery Criteria, above). The Recovery Plan states the importance of a large wolf population throughout Minnesota Wolf Management Zones 1 through 4 (geographically identical to Zone A in the 2001 Minnesota Wolf Management Plan, *see* Figure 2 in this rule) and the need for a second viable wolf population occupying 10,000 sq mi or 5,000 sq mi elsewhere in the eastern United States (depending on its isolation from the Minnesota wolf population) (USFWS 1992, pp. 24–29). These portions of Minnesota (Management Zones 1 through 4) and the portions of the range that support the second viable wolf population (Wisconsin Zones 1 and 2 and the entire Upper Peninsula of Michigan) are a SPR in the WGL DPS.

The Recovery Plan also discusses the importance of low-road-density areas, the importance of minimizing wolf-human conflicts, and the maintenance of an adequate natural prey base in the areas hosting these two necessary wolf populations. The Recovery Plan, along with numerous other scientific publications, supports the need to manage and reduce wolf-human conflicts. The Recovery Plan specifically recommends against managing wolves in large areas of unsuitable habitat, stating that Minnesota Zone 5 should be managed with a goal of zero wolves there, because ''Zone 5 is not suitable for wolves. Wolves found there should be eliminated by any legal means'' (USFWS 1992, p. 20). Therefore, the Recovery Plan views Zone 5 (identical to Minnesota Wolf Management Zone B, Figure 2), which is roughly 60 percent of the State, as not an important part of the range of the gray wolf. This portion of the State is predominantly agricultural land, with high road densities, and high potential for wolves to depredate on livestock. Although individual wolves and some wolf packs occupy parts of Zone 5, these wolves are using habitat islands or are existing in other situations where conditions generally are not conducive to their long-term persistence. Therefore, Minnesota Wolf Management Zone B (Recovery Plan Zone 5) is not a significant portion of the range within the DPS.

The second population, necessary to enhance both the resiliency and redundancy of the WGL DPR, has developed by naturally recolonizing suitable habitat areas in Wisconsin and the UP (*see* Recovery of the Gray Wolf in the Western Great Lakes Area, above). In Wisconsin, suitable habitat

(delineated as Zones 1 and 2 in Figure 3) is now largely occupied by wolf packs, but there are some gaps in the northeastern part of the State in Zone 1 where there appears to be room for additional packs to occupy areas between existing packs (Wydeven *et al.* 2006, p. 33). Similarly, in the UP of Michigan, wolf pairs or packs occur throughout the area identified as suitable (i.e., a high probability of wolf pack occupancy; Mladenoff *et al.* 1995, p. 287, Potvin *et al.* 2005, p. 1666), including every county of the UP except possibly Keweenaw County. Wolf density is lower in the northern and eastern portions of the UP where lower deer numbers may prevent establishment of packs in some localities (Potvin *et al.* 2005, pp. 1665–1666), but over the next several years packs may be able to fill in some of the currently unoccupied areas. Based on the suitability of the habitat in these areas and the importance of this second population to long-term wolf population viability, Wisconsin Zones 1 and 2 (*see* Figure 3) and the entire UP of Michigan are a SPR of the gray wolf WGL DPS.

The NLP of Michigan appears to have the only unoccupied potentially suitable wolf habitat in the Midwest that is of sufficient size to maintain wolf packs (Gehring and Potter 2005, p. 1239; Potvin 2003, pp. 44–45), although its small size and fragmented nature may mean that NLP wolf population viability would be dependent upon continuing immigration from the UP. The only part of Michigan's Lower Peninsula that warrants any consideration for inclusion as suitable habitat for the WGL DPS is composed of those areas of fragmented habitat studied by Potvin (2003, pp. 44–45) and Gehring and Potter (2005, p. 1239). However, these areas amount to less than half of the minimum area identified by the Recovery Plan as needed for the establishment of viable populations. These Lower Peninsula areas therefore might have difficulty maintaining wolf populations even with the help of occasional immigration of wolves from the UP (see *Suitable Habitat Within the Western Great Lakes Gray Wolf DPS* for additional discussion). While the UP wolves may be significant to any Lower Peninsula wolf population that may develop (occasional UP to Lower Peninsula movements may provide important genetic and demographic augmentation crucial to a small population founded by only a few individuals), the reverse will not be true—Lower Peninsula wolves would not be important to the wolf population in the UP. Thus, we conclude that the Northern Lower Peninsula is not a significant portion of the range of the gray wolf in the WGL DPS.

The only area outside these three states and within the WGL DPS that potentially might hold wolves on a frequent or possibly constant basis is the Turtle Mountain region that straddles the international border in north central North Dakota in the northwestern corner of the DPS. Road densities within the Turtle Mountains are below the thresholds believed to limit colonization by wolves. However, this area is only about 579 sq mi (1,500 sq km), with approximately 394 sq mi (1,020 sq km) in North Dakota, and roughly 185 sq mi (480 sq km) in Manitoba (Licht and Huffman 1996, p. 172). This area is far smaller that the 10,000 sq mi of habitat considered minimally necessary to support an isolated wolf population (USFWS 1992, pp. 25–26). Furthermore, the Manitoba portion of the Turtle Mountains is outside the currently listed area for the gray wolf and outside this WGL DPS. While this area may provide a small area of marginal wolf habitat and may support limited and occasional wolf reproduction, the Turtle Mountain area within the United States is not a SPR of gray wolves within the WGL DPS, because of its very small area and its setting as an island of forest surrounded by a landscape largely modified for agriculture and grazing (Licht and Huffman 1996, p. 173).

Similarly, other portions of the WGL DPS that lack suitable habitat, or only have areas of suitable habitat that are below the area thresholds specified in the Recovery Plan and/or are highly fragmented, cannot be considered a SPR of the gray wolf in the WGL DPS. These areas include the rest of eastern North Dakota, South Dakota, Iowa, Illinois, Indiana, Ohio, Wisconsin Wolf Management Zones 3 and 4 (see Figure 3), and most of the LP of Michigan. While large areas of historical range within the DPS boundary are either unoccupied by the species or occupied only on a transient basis, these areas are almost completely lacking suitable habitat, and there is little likelihood that they could ever support viable wolf populations. For example, of the five States partially included in the WGL DPS, the eastern halves of North Dakota and South Dakota arguably contain the best potential area for wolf recovery because of their low human population densities. Yet even there, the landscape is predominantly cropland and grazing land, the result of massive conversion from the native prairies where gray wolves once hunted bison, and it is covered with a network of public roads. Road density in eastern South Dakota is approximately 1.68 mi per sq mi, and the South Dakota Department of Transportation states that figure likely does not include the many section line roads that are open to public travel but are not on a regular maintenance schedule (Larson in litt. 2006b). The landscape of North Dakota is similar, with merely two percent of the State forested, resulting in a cropland-dominated landscape in eastern North Dakota that provides negligible cover for wolf use in denning and escape, except in the Turtle Mountains. The road density across the portion of North Dakota within the WGL DPS is 1.01 mi per sq mi (Barnhardt in litt. 2006). A finer-grained analysis (Moffett 1997, p. 31) shows that only small and scattered areas are below the 1 mi per sq mi threshold established by Great Lakes area researchers (Mladenoff *et al.*, 1995, pp. 288–289) as needed for the maintenance of viable wolf populations, and none of these areas of lower road density come close to the minimum size identified by the Recovery Plan (USFWS 1992, pp. 25–26) for a viable wolf population. In the open grazing and cropland-dominated landscape of the eastern Dakotas, it is likely that viable wolf populations would require even lower road densities than the threshold established by researchers in the much more wooded landscapes of Minnesota, Wisconsin, and the UP. Therefore, the eastern portions of South Dakota and North Dakota do not provide suitable gray wolf habitat and these areas cannot be considered to be significant portions of gray wolf range in the WGL DPS.

In summary, the areas that we determine to be a significant portion of the range of the WGL DPS are Minnesota Wolf Management Zone A (Figure 2), Wisconsin Zones 1 and 2 (Figure 3), and the entire Upper Peninsula of Michigan. These areas constitute the SPR in the DPS, because they fully meet the biological needs of the species and provide the conditions and land base to counter the threats to the wolf population within the DPS. The other areas of the WGL DPS do not constitute significant portions of the range of the gray wolf.

Wolf Populations on Federal Lands

National forests, and the prey species found in their various habitats, have been important to wolf conservation and recovery in the core areas of the WGL DPS. There are five national forests with resident wolves (Superior, Chippewa, Chequamegon-Nicolet, Ottawa, and Hiawatha National Forests) in Minnesota, Wisconsin and Michigan. Their wolf populations range from approximately 20 on the Nicolet portion

of the Chequamegon-Nicolet National Forest in northeastern Wisconsin, to 160–170 on the UP's Ottawa National Forest, to an estimated 465 (in winter of 2003–04) on the Superior National Forest in northeastern Minnesota (Lindquist in litt. 2005). Nearly half of the wolves in Wisconsin currently use the Chequamegon portion of the Chequamegon-Nicolet National Forest.

Voyageurs National Park, along Minnesota's northern border, has a land base of nearly 882 km^2 (340 mi^2). There are 40 to 55 wolves within 7 to 11 packs that exclusively or partially reside within the park, and at least 4 packs are located wholly inside the Park boundaries (Holbeck in litt. 2005, based on 2000–2001 data).

Within the boundaries of the WGL DPS, we currently manage seven units within the National Wildlife Refuge System with significant wolf activity. Primary among these are Agassiz National Wildlife Refuge (NWR), Tamarac NWR, and Rice Lake NWR in Minnesota; Seney NWR in the UP of Michigan; and Necedah NWR in central Wisconsin. Agassiz NWR has had as many as 20 wolves in 2 to 3 packs in recent years. In 1999, mange and illegal shootings reduced them to a single pack of five wolves and a separate lone wolf. Since 2001, however, two packs with a total of 10 to 12 wolves have been using the Refuge. About 60 percent of the packs' territories are located on the Refuge or on adjacent State-owned wildlife management area (Huschle in litt. 2005). Tamarac NWR has 2 packs, with a 15-year average of 12 wolves in one pack; adults and an unknown number of pups comprise the second pack Boyle, in litt. 2005). Rice Lake NWR, in Minnesota, has one pack of nine animals using the Refuge in 2004; in 2005, the pack had at least 6 individuals. Other single or paired wolves pass through the Refuge frequently (Stefanski pers. comm. 2004; McDowell in litt. 2005). In 2003, Seney NWR had one pack with two adults and two pups; in 2005 there were two pairs of wolves and several lone individuals using the Refuge (Olson in litt. 2005). Necedah NWR currently has 2 packs with at least 13 wolves in the packs (Trick in litt. 2005). Over the past ten years, Sherburne and Crane Meadows NWRs in central Minnesota have had intermittent, but reliable, observations and signs of individual wolves each year. To date, no established packs have been documented on either of those Refuges. The closest established packs are within 15 miles of Crane Meadows NWR at Camp Ripley Military Installation and 30 miles north of Sherburne NWR at Mille Lacs State Wildlife Management Area (Holler in litt. 2005).

Suitable Habitat Ownership and Protection

In Minnesota, public lands, including national forests, a national park, national wildlife refuges, tax-forfeit lands (managed mostly by counties), State forests, State wildlife management areas, and State parks, encompass approximately 42 percent of current wolf range. American Indians and Tribes own 3 percent, an additional 1,535 square miles (2,470 sq km), in Minnesota's wolf range (*see* Erb and Benson 2004, table 1). In its 2001 *Minnesota Wolf Management Plan*, MN DNR states that it ''will continue to identify and manage currently occupied and potential wolf habitat areas to benefit wolves and their prey on public and private land, in cooperation with landowners and other management agencies'' (MN DNR 2001, p. 25). MN DNR will monitor deer and moose habitat and, when necessary and appropriate, improve habitat for these species. MN DNR maintains that several large public land units of State parks and State forests along the Wisconsin border will likely ensure that the connection between the two States' wolf populations will remain open to wolf movements. Nevertheless, MN DNR stated that it would cooperate with Wisconsin Department of Natural Resources to incorporate the effects of future development ''into long-term viability analyses of wolf populations and dispersal in the interstate area'' (MN DNR 2001, p. 27).

The MN DNR Divisions of Forestry and Wildlife directly administer approximately 5,330 square miles of land in Minnesota's wolf range. DNR has set goals of enlarging and protecting its forested land base by, in part, ''minimizing the loss and fragmentation of private forest lands'' (MN DNR 2000, p. 20) and by connecting forest habitats with natural corridors (MN DNR 2000, p. 21). It plans to achieve these goals and objectives via several strategies, including the development of (Ecological) Subsection Forest Resource Management Plans (SFRMP) and to expand its focus on corridor management and planning.

In 2005 the Forest Stewardship Council (FSC) certified that 4.84 million acres of State-administered forest land are ''well managed'' (FSC 2005); the Sustainable Forestry Initiative (SFI) also certified that MN DNR was managing these lands to meet its standards. For the FSC certification, independent certifiers assessed forest management against FSC's Lakes States Regional Standard, which includes a requirement to maximize habitat connectivity to the extent possible at the landscape level (FSC 2005, p. 22).

Efforts to maximize habitat connectivity in the range of gray wolves would complement measures the MN DNR described in its State wolf plan (MN DNR 2001, pp. 26–27). As part of its post-delisting monitoring, the Service will review certification evaluation reports issued by FSC to assess MN DNR's ongoing efforts in this area.

Counties manage approximately 3,860 square miles of tax forfeit land in Minnesota's wolf range (MN DNR unpublished data). We are aware of no specific measures that any county in Minnesota takes to conserve wolves. If most of the tax-forfeit lands are maintained for use as timber lands or natural areas, however, and if regional prey levels are maintained, management specifically for wolves on these lands will not be necessary. MN DNR manages ungulate populations ''on a regional basis to ensure sustainable harvests for hunters, sufficient numbers for aesthetic and nonconsumptive use, and to minimize damage to natural communities and conflicts with humans such as depredation of agricultural crops'' (MN DNR 2001, p. 17). Moreover, although counties may sell tax-forfeit lands subject to Minnesota State law, they generally manage these lands to ensure that they will retain their productivity as forests into the future. For example, Crow Wing County's mission for its forest lands includes the commitment to ''sustain a healthy, diverse, and productive forest for future generations to come.'' In addition, at least four counties in Minnesota's wolf range—Beltrami, Carlton, Koochiching, and St. Louis—are certified by SFI, and four others (Aitkin, Cass, Itasca, and Lake) have been certified by FSC. About ten private companies with industrial forest lands in Minnesota's wolf range have also been certified by FSC.

There are no legal or regulatory requirements for the protection of wolf habitat, per se, on private lands in Minnesota. Land management activities such as timber harvest and prescribed burning carried out by public agencies and by private land owners in Minnesota's wolf range incidentally and significantly improves habitat for deer, the primary prey for wolves in the State. The impact of these measures is apparent from the continuing high deer densities in Minnesota's wolf range. The State's three largest deer harvests have occurred in the last three years (2003–05), and approximately one-half of the

Minnesota deer harvest is in the Forest Zone, which encompasses most of the occupied wolf range in the State (Lennarz 2005, p. 93, 98).

Given the extensive public ownership and management of land within Minnesota's wolf range, as well as the beneficial habitat management expected from tribal lands, we believe suitable habitat, and especially an adequate wild prey base, will remain available to the State's wolf population for the foreseeable future. Management of private lands for timber production will provide additional habitat suitable for wolves and white-tailed deer.

Similarly, current lands in northern and central Wisconsin that are judged to be primary and secondary wolf habitat are well protected from significant adverse development and habitat degradation due to public ownership and/or protective management that preserves the habitat and wolf prey base. Primary habitat (that is, areas with greater than 50 percent probability of wolf pack occupancy, Wydeven *et al.* 1999, pp. 47–48) totals 5,743 sq mi (14,874 sq km) and is 62 percent in Federal, State, Tribal, or county ownership. County lands, mostly county forests, comprise 29 percent of the primary habitat and Federal lands, mostly the Chequamegon-Nicolet National Forest, total another 17 percent. Most tribal land (7 percent of primary habitat), while not public land, is also very likely to remain as suitable deer and wolf habitat for the foreseeable future. State forest ownership protects 8 percent. Private industrial forest management practices will protect another 10 percent of the primary habitat, although unpredictable timber markets and the demand for second or vacation home sites may reduce this acreage over the next several decades. The remaining 29 percent is in other forms of private ownership and is vulnerable to loss from the primary habitat category to an unknown extent (Sickley in litt. 2006, unpublished data updating Table C2 of WI DNR 1999, p. 48).

Areas judged to be secondary wolf habitat by Wisconsin DNR (10 to 50 percent probability of occupancy by wolf packs, Wydeven *et al.* 1999, pp. 47–48) are somewhat more developed or fragmented habitats and are less well protected overall, because only slightly over half is in public ownership or under management that protects the habitat and prey base. Public and tribal ownership protects 48 percent of the secondary habitat, with county (17 percent) and national (18 percent) forests ownership again protecting the largest segments. Tribal ownership covers 5 percent, and state ownership, 7 percent. Private industrial forest ownership provides protection to 5 percent, and the remaining 47 percent is in other forms of private ownership (Sickley in litt. 2006).

County forest lands represent the single largest category of primary wolf habitat in Wisconsin. Wisconsin Statute 28.11 guides the administration of county forests, and directs management for production of forest products together with recreational opportunities, wildlife, watershed protection and stabilization of stream flow. This Statute also provides a significant disincentive to conversion for other uses. Any proposed withdrawal of county forest lands for other uses must meet a standard of a higher and better use for the citizens of Wisconsin, and be approved by two-thirds of the County Board. As a result of this requirement, withdrawals are infrequent, and the county forest land base is actually increasing.

This analysis shows that nearly three-quarters of the primary habitat in Wisconsin receives substantial protection due to ownership and/or management for sustainable timber production. Over half of the secondary habitat is similarly protected. Given that portions of the primary habitat in northeastern Wisconsin remain sparsely populated with wolf packs (Wydeven *et al.* 2006, p. 33), thereby allowing for continuing wolf population expansion in that area, we believe this degree of habitat protection is more than adequate to support a viable wolf population in Wisconsin for the foreseeable future.

In the UP of Michigan, State and Federal ownership comprises 2.0 and 2.1 million acres respectively, representing 19.3 percent and 20.1 percent of the land surface of the UP. The Federal ownership is composed of 87 percent national forest, 8 percent national park, and 5 percent national wildlife refuge. The management of these three categories of Federal land is discussed elsewhere, but clearly will benefit gray wolves and their prey.

State lands on the UP are 94 percent State forest land, 6 percent State park, and less than 1 percent in fishing and boating access areas and State game areas. Part 525, Sustainable Forestry on State Forestlands, of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, directs State forestland management in Michigan. It requires the MI DNR to manage the State forests in a manner consistent with sustainable forestry, to prepare and implement a management plan, and to seek and maintain a third party certification that the lands are managed in a sustainable fashion (MI DNR 2005c, p. 1).

Much of the private land on the UP is managed or protected in a manner that will maintain forest cover and provide suitable habitat for wolves and white-tailed deer. Nearly 1.9 million acres of large-tract industrial forest lands and another 1.9 million acres of smaller private forest land are enrolled in the Commercial Forest Act (CFA). These 3.7 million acres are managed for long-term sustainable timber production under forest management plans written by certified foresters; in return, the landowners benefit from a reduction in property taxes. In addition, nearly 37,000 acres on the UP are owned by The Nature Conservancy, and continue to be managed to restore and preserve native plant and animal communities. Therefore, these private land management practices currently are preserving an additional 36 percent of the UP as suitable habitat for wolves and their prey species.

In total, 39 percent of the UP is federally- and State-owned land whose management will benefit wolf conservation for the foreseeable future, and another 36 percent is private forest land that is being managed, largely under the incentives of the CFA, in a way that provided provides suitable habitat and prey for wolf populations. Therefore, a minimum of nearly three-quarters of the UP should continue to be suitable for gray wolf conservation, and we do not envision UP habitat loss or degradation as a problem for wolf population viability in the foreseeable future.

Hearne *et al.* (2003), determined that a viable wolf population (one having less than 10 percent chance of extinction over 100 years), should consist of at least 175 to 225 wolves (p. 170), and they modeled various likely scenarios of habitat conditions in the UP of Michigan and northern Wisconsin through the year 2020 to determine whether future conditions would support a wolf population of that size. Most scenarios of future habitat conditions resulted in viable wolf populations in each State through 2020. When the model analyzed the future conditions in the two States combined, all scenarios produced a viable wolf population through 2020. Their scenarios included increases in human population density, changes in land ownership that may result in decreased habitat suitability, and increased road density (pp. 101–151).

The large areas of unsuitable habitat in the eastern Dakotas; the northern portions of Iowa, Illinois, Indiana, and Ohio; and the southern areas of

Minnesota, Wisconsin, and Michigan; as well as the relatively small areas of unoccupied potentially suitable habitat, do not constitute a SPR for the WGL DPS. Therefore, we have determined that the existing and likely future threats to wolves outside the currently occupied areas, and especially to wolves outside of Minnesota, Wisconsin, and the UP, do not rise to the level that they threaten the long-term viability of wolf populations in Minnesota, Wisconsin, and the UP of Michigan.

In summary, wolves currently occupy the vast majority of the suitable habitat in the WGL DPS, which constitutes the SPR within the WGL DPS, and that habitat is adequately protected for the foreseeable future. Unoccupied areas that have the characteristics of suitable habitat exist in small and fragmented parcels and are not likely to develop viable wolf populations. Threats to those habitat areas, which are not a SPR within the WGL SPR, will not adversely impact the recovered wolf metapopulation in the DPS.

Prey

Wolf density is heavily dependent on prey availability (e.g., expressed as ungulate biomass, Fuller *et al.* 2003, pp. 170–171), but prey availability is not likely to threaten wolves in the WGL DPS. Conservation of primary wolf prey in the WGL DPS, white-tailed deer and moose, is clearly a high priority for State conservation agencies. As Minnesota DNR points out in its wolf management plan (MN DNR 2001, p. 25), it manages ungulates to ensure a harvestable surplus for hunters, nonconsumptive users, and to minimize conflicts with humans. To ensure a harvestable surplus for hunters, MN DNR must account for all sources of natural mortality, including loss to wolves, and adjust hunter harvest levels when necessary. For example, after severe winters in the 1990's, MN DNR modified hunter harvest levels to allow for the recovery of the local deer population (MN DNR 2001, p. 25). In addition to regulation of human harvest of deer and moose, MN DNR also plans to continue to monitor and improve habitat for these species. Land management carried out by other public agencies and by private land owners in Minnesota's wolf range, including timber harvest and prescribed fire, incidentally and significantly improves habitat for deer, the primary prey for wolves in the State. The success of these measures is apparent from the continuing high deer densities in the Forest Zone of Minnesota, and the fact that the State's three largest deer harvests have occurred in the last three years. Approximately one-half of the Minnesota deer harvest is in the Forest Zone, which encompasses most of the occupied wolf range in the State (Lennarz 2005, p. 93). There is no indication that harvest of deer and moose or management of their habitat will significantly depress abundance of these species in Minnesota's core wolf range. Therefore, prey availability is not likely to endanger gray wolves in the foreseeable future in the State.

Similarly, the deer populations in Wisconsin and the UP of Michigan are at historically high levels. Wisconsin's pre-season deer population has exceeded 1 million animals since 1984 (WI DNR undated a), and hunter harvest has exceeded 400,000 deer in 9 of the last 11 years (WI DNR undated b). Michigan's 2005 pre-season deer population was approximately 1.7 million deer, with about 336,000 residing in the UP, and the 2006 estimates projects slightly higher UP deer populations (MI DNR 2006b, pp. 2–4). Currently MI DNR is proposing revised deer management goals to guide management of the deer population through 2010. The proposed UP 2006–2010 goal range is 323,000 to 411,000 (MI DNR 2005d), which would maintain, or possibly increase, the current ungulate prey base for UP wolves. Short of a major, and unlikely, shift in deer management and harvest strategies, there will be no shortage of prey for Wisconsin and Michigan wolves for the foreseeable future.

Summary of Factor A—The wolf population in the WGL DPS currently occupies all the suitable habitat area identified for recovery in the Midwest in the 1978 and 1992 Recovery Plans, which are the SPR within the DPS, and most of the potentially suitable habitat in the WGL DPS. Unsuitable habitat, and the small fragmented areas of suitable habitat away from these core areas, are areas where viable wolf populations are unlikely to develop and persist. Although they may have been historical habitat, many of these areas are no longer suitable for wolves, and none of them are important to meet the biological needs of the species. They therefore are not a SPR of the WGL DPS.

The WGL DPS wolf population exceeds its numerical, temporal, and distributional goals for recovery. A delisted wolf population would be safely maintained above recovery levels for the foreseeable future within the SPR of the DPS. Because much important wolf habitat in the SPR is in public ownership, the States will continue to manage for high ungulate populations, and the States, Tribes, and Federal land management agencies will adequately regulate human-caused mortality of wolves and wolf prey. This will allow these three States to easily support a recovered and viable wolf metapopulation into the foreseeable future. We conclude that gray wolves within the SPR in this DPS are not in danger of extinction now, or likely to be in danger of extinction in the foreseeable future, as a result of destruction, modification, or curtailment of the species' habitat or range.

B. Overutilization for commercial, recreational, scientific, or educational purposes.

Threats to wolves resulting from scientific or educational purposes are not likely to increase substantially following delisting of the DPS, and any increased use for these purposes will be regulated and monitored by the States and Tribes in the core recovery areas. Since their listing under the Act, no gray wolves have been legally killed or removed from the wild in any of the nine States included in the WGL DPS for either commercial or recreational purposes. Some wolves may have been illegally killed for commercial use of the pelts and other parts, but we think that illegal commercial trafficking in wolf pelts or parts and illegal capture of wolves for commercial breeding purposes is rare. State wolf management plans for Minnesota, Wisconsin, and Michigan ensure that wolves will not be killed for these purposes for many years following Federal delisting, so these forms of mortality will not emerge as new threats upon delisting. See Factor D for a detailed discussion of State wolf management plans, and for applicable regulations in States lacking wolf management plans.

We do not expect the use of wolves for scientific purposes to increase in proportion to total wolf numbers in the WGL DPS after delisting. Prior to delisting, the intentional or incidental killing, or capture and permanent confinement, of endangered or threatened gray wolves for scientific purposes has only legally occurred under permits or subpermits issued by the Service (under section 10(a)(1)(A)) or by a State agency operating under a cooperative agreement with the Service pursuant to section 6 of the Act (50 CFR 17.21(c)(5) and 17.31(b)). Although exact figures are not available, throughout the conterminous 48 States, such permanent removals of wolves from the wild have been very limited and probably comprise an average of not more than two animals per year since the species was first listed as endangered. In the WGL DPS, these animals were either taken from the

Minnesota wolf population during long-term research activities (about 15 gray wolves) or were accidental takings as a result of research activities in Wisconsin (4 to 5 mortalities and 1 long-term confinement) and in Michigan (2 mortalities) (Berg in litt. 1998; Mech in litt. 1998; Roell in litt. 2004, in litt. 2005a).

The Minnesota DNR plans to encourage the study of wolves with radio-telemetry after delisting, with an emphasis on areas where they expect wolf-human conflicts and where wolves are expanding their range (MN DNR 2001, p. 19). Similarly, Wisconsin and Michigan DNRs will continue to trap wolves for radio-collaring, examination, and health monitoring for the foreseeable future (WI DNR 1999, pp. 19–21; MI DNR 1997, p. 22; WI DNR 2006a, p. 14). The continued handling of wild wolves for research, including the administration of drugs, may result in some accidental deaths of wolves. We believe that capture and radio-telemetry-related injuries or mortalities will not increase significantly above the level observed before delisting in proportion to wolf abundance; adverse effects to wolves associated with such activities have been minimal and would not constitute a threat to the WGL DPS.

No wolves have been legally removed from the wild for educational purposes in recent years. Wolves that have been used for such purposes are the captive-reared offspring of wolves that were already in captivity for other reasons, and this is not likely to change as a result of Federal delisting. We do not expect taking for educational purposes to constitute any threat to Midwest wolf populations for the foreseeable future.

See Factor E for a discussion of taking of gray wolves by Native Americans for religious, spiritual, or traditional cultural purposes. See the Depredation Control Programs sections under Factor D for discussion of other past, current, and potential future forms of intentional and accidental take by humans, including depredation control, public safety, and under public harvest. While public harvest may include recreational harvest, it is likely that public harvest will also serve as a management tool, so it is discussed in Factor D.

Summary of Factor B—Taking wolves for scientific or educational purposes in the other WGL DPS States may not be regulated or closely monitored in the future, but the threat to wolves in those States will not be significant to the long-term viability of the wolf population in the WGL DPS. The potential limited commercial and recreational harvest that may occur in the DPS will be regulated by State and/or Tribal conservation agencies and is discussed under Factor D. Therefore, we conclude that overutilization for commercial, recreational, scientific, or educational purposes will not be a threat sufficient to cause the WGL DPS gray wolves to be in danger of extinction in the foreseeable future in all or a significant portion of the range within the WGL DPS.

C. Disease or predation.

Disease

Many diseases and parasites have been reported for the gray wolf, and several of them have had significant impacts during the recovery of the species in the 48 conterminous States (Brand *et al.* 1995, p. 419; WI DNR 1999, p. 61). If not monitored and controlled by States, these diseases and parasites, and perhaps others, may threaten gray wolf populations in the future. Thus, to avoid a future decline caused by diseases or parasites, States and their partners will have to diligently monitor the prevalence of these pathogens in order to effectively respond to significant outbreaks.

Canine parvovirus (CPV) is a relatively new disease that infects wolves, domestic dogs, foxes, coyotes, skunks, and raccoons. Recognized in the United States in 1977 in domestic dogs, it appeared in Minnesota wolves (based upon retrospective serologic evidence) live-trapped as early as 1977 (Mech *et al.* 1986, p. 105). Minnesota wolves, however, may have been exposed to the virus as early as 1973 (Mech and Goyal 1995, p. 568). Serologic evidence of gray wolf exposure to CPV peaked at 95 percent for a group of Minnesota wolves live-trapped in 1989 (Mech and Goyal 1993, p, 331). In a captive colony of Minnesota wolves, pup and yearling mortality from CPV was 92 percent of the animals that showed indications of active CPV infections in 1983 (Mech and Fritts 1987, p. 6), demonstrating the substantial impacts this disease can have on young wolves. It is believed that the population impacts of CPV occur via diarrhea-induced dehydration leading to abnormally high pup mortality (WI DNR 1999, p. 61). CPV has been detected in nearly every wolf population in North America including Alaska (Bailey *et al.* 1995, p. 443) and exposure in wolves is now believed to be almost universal.

There is no evidence that CPV has caused a population decline or has had a significant impact on the recovery of the Minnesota gray wolf population. Mech and Goyal (1995, p. 566, Table 1, p. 568, Fig. 3), however, found that high CPV prevalence in the wolves of the Superior National Forest in Minnesota occurred during the same years in which wolf pup numbers were low. Because the wolf population did not decline during the study period, they concluded that CPV-caused pup mortality was compensatory, that is, it replaced deaths that would have occurred from other causes, especially starvation of pups. They theorized that CPV prevalence affects the amount of population increase and that a wolf population will decline when 76 percent of the adult wolves consistently test positive for CPV exposure. Their data indicate that CPV prevalence in adult wolves in their study area increased by an annual average of 4 percent during 1979–93 and was at least 80 percent during the last 5 years of their study (Mech and Goyal 1995, pp. 566, 568). Additional data gathered since 1995, currently in preparation for publication, suggests that CPV has been reducing pup survival both in the Superior National Forest and statewide, between 1984 and 2004; however, statewide there is some evidence of a slight increase in pup survival since about 1995. These conclusions are based upon an inverse relationship between pup numbers in summer captures and seroprevalence of CPV antibodies in summer-captured adult wolves (Mech in litt. 2006). These data provide strong justification for continuing population and disease monitoring.

Wisconsin DNR, in conjunction with the U.S. Geological Survey National Wildlife Health Center in Madison, Wisconsin, (formerly the National Wildlife Health Laboratory) has an extensive dataset on the incidence of wolf diseases, beginning in 1981. Canine parvovirus exposure was evident in 5 of 6 wolves tested in 1981, and probably stalled wolf population growth in Wisconsin during the early and mid-1980s when numbers there declined or were static; at that time 75 percent of 32 wolves tested positive for CPV. During the following years of population increase (1988–96) only 35 percent of the 63 wolves tested positive for CPV (WI DNR 1999, p. 62). More recent exposure rates for CPV continue to be high in Wisconsin wolves, with annual rates ranging from 60 to 100 percent among wild wolves handled from 2001 through mid-2005. Part of the reason for high exposure percentages is likely an increased emphasis in sampling pups and Central Forest wolves starting in 2001, so comparisons of post- and pre-2001 data are of limited value. CPV appears not to be a significant cause of mortality, as only a single wolf (male pup) is known to have died from CPV during this period (Wydeven and Wiedenhoeft 2002, p. 8 Table 4; 2003a,

pp. 11–12 Table 4; 2004a, pp. 11–12 Table 5; 2005, pp. 19–20 Table 4; 2006, pp. 23–25 Table 4). While the difficulty of discovering CPV-killed pups must be considered, and it is possible that CPV-caused pup mortality is being underestimated, the continuing increase of the Wisconsin wolf population indicates that CPV mortality is no longer impeding wolf population growth in the State. It may be that many Wisconsin wolves have developed some degree of resistance to CPV, and this disease is no longer a significant threat in the State.

Similar to Wisconsin wolves, serological testing of Michigan wolves captured from 1992 through 2001 (most recent available data) shows that the majority of UP wolves have been exposed to CPV. Fifty-six percent of 16 wolves captured from 1992 to 1999 and 83 percent of 23 wolves captured in 2001 showed antibody titers at levels established as indicative of previous CPV exposure that may provide protection from future infection from CPV (Beheler in litt. undated, in litt. 2004). There are no data showing any CPV-caused wolf mortality or population impacts to the gray wolf population on the UP, but few wolf pups are handled in the UP (Hammill in litt. 2002, Beyer in litt. 2006a), so low levels of CPV-caused pup mortality may go undetected there. Mortality data are primarily collected from collared wolves, which until recently received CPV inoculations. Therefore, mortality data for the UP should be interpreted cautiously.

Sarcoptic mange is caused by a mite (*Sarcoptes scabiei*) infection of the skin. The irritation caused by the feeding and burrowing mites results in scratching and then severe fur loss, which in turn can lead to mortality from exposure during severe winter weather. The mites are spread from wolf to wolf by direct body contact or by common use of ''rubs'' by infested and uninfested animals. Thus, mange is frequently passed from infested females to their young pups, and from older pack members to their pack mates. In a long-term Alberta, Canada, 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, p. 428).

From 1991 to 1996, 27 percent of live-trapped Wisconsin wolves exhibited symptoms of mange. During the winter of 1992–93, 58 percent showed symptoms, and a concurrent decline in the Wisconsin wolf population was attributed to mange-induced mortality (WI DNR 1999, p. 61). Seven Wisconsin wolves died from mange from 1993 through October 15, 1998, and severe fur loss affected five other wolves that died from other causes. During that period, mange was the third largest cause of death in Wisconsin wolves, behind trauma (usually vehicle collisions) and shooting (Thomas in litt. 1998). Largely as a result of mange, pup survival was only 16 percent in 1993, compared to a normal 30 percent survival rate from birth to one year of age.

Mange continues to be prevalent in Wisconsin, especially in the central Wisconsin wolf population. Mortality data from closely monitored radio-collared wolves provides a relatively unbiased estimate of mortality factors, especially those linked to disease or illegal actions, because nearly all carcasses are located within a few days of deaths. Diseased wolves suffering from hypothermia or nearing death generally crawl into dense cover and may go undiscovered if they are not radio-tracked (Wydeven *et al.* 2001b, p. 14). These data show that during the period of 2000 through August 2006 mange has killed as many wolves as were killed by illegal shooting, making them the two highest causes of wolf mortality in the State. Based on mortality data from closely monitored radio-collared wolves, mange mortality ranged from 14 percent of deaths in 2002 to 30 percent of deaths in 2003, totaling 27 percent of radio-collared wolf deaths for this period. Illegal shootings resulted in the death of an identical percentage of wolves (Wydeven and Wiedenhoeft 2001, p. 8 Table 5; 2002 p. 8 Table 4; 2003a, pp. 11–12 Table 4; 2004a, pp. 11–12 Table 5; 2005, pp. 19–20 Table 4). Preliminary data for 2006 show mange mortality and illegal shooting remain equal at 30 percent of radio-collared wolf mortality (Wydeven in litt. 2006c, unpublished data). Mange mortality does not appear to be declining in Wisconsin, and the incidence of mange may be on the increase among central Wisconsin wolf packs (Wydeven *et al.* 2005b, p. 6). However, not all mangy wolves succumb; other observations showed that some mangy wolves are able to survive the winter (Wydeven *et al.* 2001b, p. 14).

The survival of pups during their first winter is believed to be strongly affected by mange. The highest to date wolf mortality (30 percent of radio-collared wolves; Wydeven and Wiedenhoeft 2004a, p. 12) from mange in Wisconsin in 2003 may have had more severe effects on pup survival than in previous years. The prevalence of the disease may have contributed to the relatively small population increase in 2003 (2.4 percent in 2003 as compared to the average 18 percent to that point since 1985). However, mange has not caused a decline in the State's wolf population, and even though the rate of population increase has slowed in recent years, the wolf population continues to increase despite the continued prevalence of mange in Wisconsin wolves. Although mange mortality may not be the primary determinant of wolf population growth in the State, the impacts of mange in Wisconsin need to be closely monitored as identified and addressed in the Wisconsin wolf management plan (WI DNR 1999, p. 21; 2006a, p. 14).

Seven wild Michigan wolves died from mange during 1993–97, making it responsible for 21 percent of all mortalities, and all disease-caused deaths, during that period (MI DNR 1997, p. 39). During bioyears (mid-April to mid-April) 1999–04, mange-induced hypothermia killed 9 of the 11 radio-collared Michigan wolves whose cause of death was attributed to disease, and it represented 17 percent of the total mortality during those years. Mange caused the death of 31 percent of radio-collared wolves during the 1999–2001 bioyears, but that rate decreased to 11 percent during the 2001–04 bioyears. However, the sample sizes are too small to reliably detect a trend (Beyer 2005 unpublished data). Before 2004, MI DNR treated all captured wolves with Ivermectin if they showed signs of mange. In addition, MI DNR vaccinated all captured wolves against CPV and canine distemper virus (CDV) and administered antibiotics to combat potential leptospirosis infections. These inoculations were discontinued in 2004 to provide more natural biotic conditions and to provide biologists with an unbiased estimate of disease-caused mortality rates in the population (Roell in litt. 2005b).

Wisconsin wolves similarly had been treated with Ivermectin and vaccinated for CPV and CDV when captured, but the practice was stopped in 1995 to allow the wolf population to experience more natural biotic conditions. Since that time, Ivermectin has been administered only to captured wolves with severe cases of mange. In the future, Ivermectin and vaccines will be used sparingly on Wisconsin wolves, but will be used to counter significant disease outbreaks (Wydeven in litt. 1998).

Among Minnesota wolves, mange may always have been present at low levels. However, based on observations of wolves trapped under the Federal wolf depredation control program, mange appears to have become more widespread in the State during the

1999–2005 period. Data from Wildlife Services trapping efforts showed only 8 wolves showing symptoms of mange were trapped during a 22-month period in 1994–96; in contrast, Wildlife Services trapped 10, 6, and 19 mangy wolves in 2003, 2004, and 2005, respectively (2005 data run through November 22 only). These data indicate that 12.6 percent of Minnesota wolves were showing symptoms of mange in 2005 (Paul 2005 in litt.). However, the thoroughness of these observations may not have been consistent over this 11-year period. In a separate study, mortality data from 12 years (1994–2005) of monitoring radio-collared wolves in 7–9 packs in north-central Minnesota show that 11 percent died from mange (DelGiudice in litt. 2005). However, the sample size (17 total mortalities, 2 from mange in 1998 and 2004) is far too small to deduce trends in mange mortality over time. Furthermore, these data are from mange mortalities, while the Wildlife Services' data are based on mange symptoms, not mortalities.

It is hypothesized that the current incidence of mange is more widespread than it would have otherwise been, because the WGL wolf range has experienced a series of mild winters beginning with the winter of 1997–98 (Van Deelen 2005, Fig. 2). Mange-induced mortality is chiefly a result of winter hypothermia, thus the less severe winters resulted in higher survival of mangy wolves, and increased spread of mange to additional wolves during the following spring and summer. The high wolf population, and especially higher wolf density on the landscape, may also be contributing to the increasing occurrence of mange in the WGL wolf population. There has been speculation that 500 or more Minnesota wolves died as a result of mange over the last 5 to 6 years, causing a slowing or cessation of previous wolf population increase in the State (Paul in litt. 2005).

Lyme disease, caused by the spirochete (*Borrelia burgdorferi*), is another relatively recently recognized disease, first documented in New England in 1975, although it may have occurred in Wisconsin as early as 1969. It is spread by ticks that pass the infection to their hosts when feeding. Host species include humans, horses, dogs, white-tailed deer, white-footed mice, eastern chipmunks, coyotes, and wolves. The prevalence of Lyme disease exposure in Wisconsin wolves averaged 70 percent of live-trapped animals in 1988–91, dropped to 37 percent during 1992–97 and was back up to 56 percent (32 of 57 tested) in 2002–04 (Wydeven and Wiedenhoeft 2004b, pp. 23–24 Table 7; 2005, pp. 23–24 Table 7). Clinical symptoms have not been reported in wolves, but infected dogs can experience debilitating conditions, and abortion and fetal mortality have been reported in infected humans and horses. It is possible that individual wolves may be debilitated by Lyme disease, perhaps contributing to their mortality; however, Lyme disease is not believed to be a significant factor affecting wolf populations (Kreeger 2003, p. 212).

The dog louse (*Trichodectes canis*) has been detected in wolves in Ontario, Saskatchewan, Alaska, Minnesota, and Wisconsin (Mech *et al.* 1985, pp. 404–405; Kreeger 2003, p. 208; Paul in litt. 2005). Dogs are probably the source of the initial infections, and subsequently wild canids transfer lice by direct contact with other wolves, particularly between females and pups. Severe infestations result in irritated and raw skin, substantial hair loss, particularly in the groin. However, in contrast to mange, lice infestations generally result in loss of guard hairs but not the insulating under fur, thus, hypothermia is less likely to occur and much less likely to be fatal (Brand *et al.* 1995, p. 426). Even though observed in nearly 4 percent in a sample of 391 Minnesota wolves in 2003–05 (Paul in litt. 2005), dog lice infestations have not been confirmed as a cause of wolf mortality, and are not expected to have a significant impact even at a local scale.

Canine distemper virus (CDV) is an acute disease of carnivores that has been known in Europe since the sixteenth century and is now infecting dogs worldwide (Kreeger 2003, p. 209). CDV generally infects dog pups when they are only a few months old, so mortality in wild wolf populations might be difficult to detect (Brand *et al.* 1995, pp. 420–421). CDV mortality among wild wolves has been documented only in two littermate pups in Manitoba (Carbyn 1982, pp. 111–112), in two Alaskan yearling wolves (Peterson *et al.* 1984, p. 31), and in two Wisconsin wolves (an adult in 1985 and a pup in 2002 (Thomas in litt. 2006; Wydeven and Wiedenhoeft 2003b, p. 20). Carbyn (1982, pp. 113–116) concluded that CDV was a contributor to a 50 percent decline of the wolf population in Riding Mountain National Park (Manitoba, Canada) in the mid-1970s. Serological evidence indicates that exposure to CDV is high among some Midwest wolves—29 percent in northern Wisconsin wolves and 79 percent in central Wisconsin wolves in 2002–04 (Wydeven and Wiedenhoeft 2004b, pp. 23–24 Table 7; 2005, pp 23–24 Table 7). However, the continued strong recruitment in Wisconsin and elsewhere in North American wolf populations indicates that distemper is not likely a significant cause of mortality (Brand *et al.* 1995, p. 421).

Other diseases and parasites, including rabies, canine heartworm, blastomycosis, bacterial myocarditis, granulomatous pneumonia, brucellosis, leptospirosis, bovine tuberculosis, hookworm, coccidiosis, and canine hepatitis have 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; Hassett in litt. 2003; Johnson 1995, p. 431, 436–438; Mech and Kurtz 1999, pp. 305–306; Thomas in litt. 1998, Thomas in litt. 2006, WI DNR 1999, p. 61; Kreeger 2003, pp. 202–214). Continuing wolf range expansion, however, likely will provide new avenues for exposure to several of these diseases, especially canine heartworm, raccoon rabies, and bovine tuberculosis (Thomas in litt. 2000, in litt. 2006), further emphasizing the need for disease monitoring programs. In addition, the possibility of new diseases developing and existing diseases, such as chronic wasting disease (CWD), West Nile Virus (WNV) and canine influenza (Crawford *et al.* 2005, 482–485), moving across species barriers or spreading from domestic dogs to wolves must all be taken into account, and monitoring programs will need to address such threats. Currently there is no evidence that CWD can directly affect canids (Thomas in litt. 2006). Wisconsin wolves have been tested for WNV at necropsy since the first spread of the virus across the State: to date all results have been negative. Although experimental infection of dogs produced no ill effects, WNV is reported to have killed two captive wolf pups, so young wolves may be at some risk (Thomas in litt. 2006).

In aggregate, diseases and parasites were the cause of 21 percent of the diagnosed mortalities of radio-collared wolves in Michigan from 1999 through 2004 (Beyer unpublished data 2005) and 27 percent of the diagnosed mortalities of radio-collared wolves in Wisconsin and adjacent Minnesota from October 1979 through June 2005 (Wydeven and Wiedenhoeft 2005, p. 21).

Many of the diseases and parasites are known to be spread by wolf-to-wolf contact. Therefore, the incidence of mange, CPV, CDV, and canine heartworm may increase as wolf densities increase in the more recently colonized areas (Thomas in litt. 2006). Because wolf densities generally are relatively stable following the first few years of colonization, wolf-to-wolf

contacts will not likely lead to a continuing increase in disease prevalence in areas that have been occupied for several years or more and are largely saturated with wolf packs (Mech in litt. 1998).

Disease and parasite impacts may increase because several wolf diseases and parasites are carried and spread by domestic dogs. This transfer of pathogens from domestic dogs to wild wolves may increase as gray wolves continue to colonize non-wilderness areas (Mech in litt. 1998). Heartworm, CPV, and rabies are the main concerns (Thomas in litt. 1998) but dogs may become significant vectors for other diseases with potentially serious impacts on wolves in the future (Crawford *et al.* 2005, pp. 482–485). However, to date wolf populations in Wisconsin and Michigan have continued their expansion into areas with increased contacts with dogs and have shown no adverse pathogen impacts since the mid-1980s impacts from CPV.

Disease and parasite impacts are a recognized concern of the Minnesota, Michigan, and Wisconsin DNRs. The Michigan Gray Wolf Recovery and Management Plan states that necropsies will be conducted on all dead wolves, and that all live wolves that are handled will be examined, with blood, skin, and fecal samples taken to provide disease information. The Michigan Plan states that wolf health and disease monitoring will receive a high priority for a minimum of five years following Federal delisting (MI DNR 1997, pp. 21–22, 45).

Similarly, the Wisconsin Wolf Management Plan states that as long as the wolf is State-listed as a threatened or endangered species, the WI DNR will conduct necropsies of dead wolves and test a sample of live-captured wolves for diseases and parasites, with a goal of screening 10 percent of the State wolf population for diseases annually. However, the plan anticipates that since State delisting (which occurred on March 24, 2004), disease monitoring will be scaled back because the percentage of the wolf population that is live-trapped each year will decline. Disease monitoring of captured wolves currently is focusing on diseases known to be causing noteworthy mortality, such as mange, and other diseases for which data are judged to be sparse, such as Lyme disease and ehrlichiosis (Wydeven and Wiedenhoeft 2006, p. 8). The State will continue to test for disease and parasite loads through periodic necropsy and scat analyses. The 2006 update to the 1999 plan also recommends that all wolves live-trapped for other studies should have their health monitored and reported to the WI DNR wildlife health specialists (WI DNR 1999, p. 21; 2006c, p. 14). Furthermore, the 2006 update identifies a need for ''continued health monitoring to document significant disease events that may impact the wolf population and to identify new diseases in the population * * *.'' (WI DNR 2006a, p. 24).

The Minnesota Wolf Management Plan states that MN DNR ''will collaborate with other investigators and continue monitoring disease incidence, where necessary, by examination of wolf carcasses obtained through depredation control programs, and also through blood/tissue physiology work conducted by DNR and the U.S. Geological Survey. DNR will also keep records of documented and suspected incidence of sarcoptic mange (MN DNR 2001, p. 32).'' In addition, it will initiate ''(R)egular collection of pertinent tissues of live captured or dead wolves'' and periodically assess wolf health ''when circumstances indicate that diseases or parasites may be adversely affecting portions of the wolf population (MN DNR 2001, p. 19).'' Unlike Michigan and Wisconsin, Minnesota has not established minimum goals for the proportion of its wolves that will be assessed for disease nor does it plan to treat any wolves, although it does not rule out these measures. Minnesota's less intensive approach to disease monitoring and management seems warranted in light of its much greater abundance of wolves than in the other two States.

In areas within the WGL DPS, but outside Minnesota, Wisconsin, and Michigan, we lack data on the incidence of diseases or parasites in transient wolves. However, the WGL DPS boundary is laid out in a manner such that the vast majority of, and perhaps all, wolves that will occur in the DPS in the foreseeable future will have originated from the Minnesota-Wisconsin-Michigan wolf metapopulation. Therefore, they will be carrying the ''normal'' complement of Midwest wolf parasites, diseases, and disease resistance with them. For this reason, any new pairs, packs, or populations that develop within the DPS are likely to experience the same low to moderate adverse impacts from pathogens that have been occurring in the core recovery areas. The most likely exceptions to this generalization would arise from exposure to sources of novel diseases or more virulent forms that are being spread by other canid species that might be encountered by wolves dispersing into currently unoccupied areas of the DPS. To increase the likelihood of detecting such novel, or more virulent diseases and thereby reduce the risk that they might pose to the core meta-population after delisting, we will encourage these States and Tribes to provide wolf carcasses or suitable tissue, as appropriate, to the USGS Madison Wildlife Health Center or the Service's National Wildlife Forensics Laboratory for necropsy. This practice should provide an early indication of new or increasing pathogen threats before they reach the core metapopulation or impact future transient wolves to those areas.

Disease summary—We believe that several diseases have had noticeable impacts on wolf population growth in the Great Lakes region in the past. These impacts have been both direct, resulting in mortality of individual wolves, and indirect, by reducing longevity and fecundity of individuals or entire packs or populations. Canine parvovirus stalled wolf population growth in Wisconsin in the early and mid-1980s and has been implicated in the decline in the mid-1980s of the isolated Isle Royale wolf population in Michigan, and in attenuating wolf population growth in Minnesota (Mech in litt. 2006). Sarcoptic mange has affected wolf recovery in Michigan's UP and in Wisconsin over the last ten years, and it is recognized as a continuing issue. Despite these and other diseases and parasites, the overall trend for wolf populations in the WGL DPS continues to be upward. Wolf management plans for Minnesota, Michigan, and Wisconsin include disease monitoring components that we expect will identify future disease and parasite problems in time to allow corrective action to avoid a significant decline in overall population viability. We conclude that diseases and parasites will not prevent the continuation of wolf recovery or the maintenance of viable wolf populations in the DPS. Delisting wolves in the WGL DPS will not significantly change the incidence or impacts of disease and parasites on these wolves. Furthermore, we conclude that diseases and parasites will not be threats sufficient to cause the WGL DPS gray wolves to be in danger of extinction in the foreseeable future in all or a significant portion of the range within the WGL DPS.

Predation

No wild animals habitually prey on gray wolves. Large prey such as deer, elk, or moose (Mech and Nelson 1989, pp. 207–208; Smith et al. 2001, p. 3), or other predators, such as mountain lions (*Felis concolor*) or grizzly bears (*Ursus arctos horribilis*) where they are extant (USFWS 2005, p. 3), occasionally kill

wolves, but this has only been rarely documented. This very small component of wolf mortality will not increase with delisting.

Wolves frequently are killed by other wolves, most commonly when packs encounter and attack a dispersing wolf as an intruder or when two packs encounter each other along a territorial boundary (Mech 1994, p. 201). This form of mortality is likely to increase as more of the available wolf habitat becomes saturated with wolf pack territories, as is the case in northeastern Minnesota, but such a trend is not yet evident from Wisconsin or Michigan data. From October 1979 through June 1998, seven (12 percent) of the mortalities of radio-collared Wisconsin wolves resulted from wolves killing wolves, and 8 of 73 (11 percent) mortalities were from this cause during 2000–05 (Wydeven 1998, p. 16 Table 4; Wydeven and Wiedenhoeft 2001, p. 8 Table 5; 2002, pp. 8–9 Table 4; 2003a, pp. 11–12 Table 4; 2004a, pp. 11–12 Table 5, 2005, p. 21 Table 5). Gogan *et al.* (2004, p. 7) studied 31 radio-collared wolves in northern Minnesota from 1987–91 and found that 4 (13 percent) were killed by other wolves, representing 29 percent of the total mortality of radio-collared wolves. Intra-specific strife caused 50 percent of mortality within Voyageurs National Park and 20 percent of the mortality of wolves adjacent to the Park (Gogan *et al.* 2004, p. 22). The Del Giudice data (in litt. 2005) show a 17 percent mortality rate from other wolves in another study area in north-central Minnesota from 1994–2005. This behavior is normal in healthy wolf populations and is an expected outcome of dispersal conflicts and territorial defense, as well as occasional intra-pack strife. This form of mortality is something that the species has evolved with and it should not pose a threat to wolf populations in the WGL DPS following delisting.

Humans have functioned as highly effective predators of the gray wolf in North America for several hundred years. European settlers in the Midwest attempted to eliminate the wolf entirely in earlier times, and the U.S. Congress passed a wolf bounty that covered the Northwest Territories in 1817. Bounties on wolves subsequently became the norm for States across the species' range. In Michigan, an 1838 wolf bounty became the ninth law passed by the First Michigan Legislature; this bounty remained in place until 1960. A Wisconsin bounty was instituted in 1865 and was repealed about the time wolves were extirpated from the State in 1957. Minnesota maintained a wolf bounty until 1965.

Subsequent to the gray wolf's listing as a federally endangered species, the Act and State endangered species statutes prohibited the killing of wolves except under very limited circumstances, such as in defense of human life, for scientific or conservation purposes, or under special regulations intended to reduce wolf depredations of livestock or other domestic animals. The resultant reduction in human-caused wolf mortality is the main cause of the wolf's reestablishment in large parts of its historical range. It is clear, however, that illegal killing of wolves has continued in the form of intentional mortality and incidental deaths.

Illegal killing of wolves occurs for a number of reasons. Some of these killings are accidental (e.g., wolves are hit by vehicles, mistaken for coyotes and shot, or caught in traps set for other animals); some of these accidental killings are reported to State, Tribal, and Federal authorities. It is likely that most illegal killings, however, are intentional and are never reported to government authorities. Because they generally occur in remote locations and the evidence is easily concealed, we lack reliable estimates of annual rates of intentional illegal killings.

In Wisconsin, all forms of human-caused mortality accounted for 54 percent of the diagnosed deaths of radio-collared wolves from October 1979 through June 2005. Thirty percent of the diagnosed mortalities, and 55 percent of the human-caused mortalities, were from shooting (firearms and bows). Another 14 percent of all the diagnosed mortalities (25 percent of the human-caused mortalities) resulted from vehicle collisions. (These percentages and those in the following paragraphs exclude two radio-collared Wisconsin wolves that were killed in depredation control actions by USDA—APHIS—Wildlife Services in 2003–04. The wolf depredation control programs in the Midwest are discussed separately under Depredation Control, below.) Preliminary 2006 data through September (8 diagnosed mortalities of radio-collared wolves) show these mortality percentages to be unchanged, with 38 percent of the mortalities resulting from mange, 38 percent shot, and 13 percent from vehicle collisions (Wydeven in litt. 2006c).

As the Wisconsin population has increased in numbers and range, vehicle collisions have increased as a percentage of radio-collared wolf mortalities. During the October 1979 through June 1992 period, only 1 of 27 (4 percent) known mortalities was from that cause; but from July 1992 through June 1998, 5 of the 26 (19 percent) known mortalities resulted from vehicle collisions (Wydeven 1998, p. 6). From 2002 through 2004, 7 of 45 (16 percent) known mortalities were from that cause (Wydeven and Wiedenhoeft 2003a, pp. 11–12 Table 4; 2004a, pp. 11–12 Table 5; 2005, pp. 19–20 Table 4).

A comparison over time for diagnosed mortalities of radio-collared Wisconsin wolves shows that 18 of 57 (32 percent) were illegally shot from October 1979 through 1998, while 12 of 42 (29 percent) were illegally shot from 2002 through 2004 (Wisconsin DNR 1999, p. 63; Wydeven and Wiedenhoeft 2003a, pp. 11–12 Table 4; 2004a, pp. 11–12 Table 4; 2005. pp. 19–20 Table 4). However, a more recent analysis incorporating 2005 and preliminary 2006 data for radio-collared wolves indicates an increase in illegal killing of wolves since 2000 (about 32 percent) compared to the previous decade (about 19 percent). The same analysis shows vehicle mortality declined and disease/malnutrition mortality increased from the 1990s to the 2000s (Wiedenhoeft 2006 unpublished data).

In the UP of Michigan, human-caused mortalities accounted for 75 percent of the diagnosed mortalities, based upon 34 wolves recovered from 1960 to 1997, including mostly non-radio-collared wolves. Twenty-eight percent of all the diagnosed mortalities and 38 percent of the human-caused mortalities were from shooting. In the UP during that period, about one-third of all the known mortalities were from vehicle collisions (MI DNR 1997, pp. 5–6). During the 1998 Michigan deer hunting season, 3 radio-collared wolves were shot and killed, resulting in one arrest and conviction (Hammill in litt. 1999, Michigan DNR 1999). During the subsequent 3 years, 8 additional wolves were killed in Michigan by gunshot, and the cut-off radio-collar from a ninth animal was located, but the animal was never found. These incidents resulted in 6 guilty pleas, with 3 cases remaining open. Data collected from radio-collared wolves from the 1999 to 2004 bioyears (mid-April to mid-April) show that human-caused mortalities still account for the majority of the wolf mortalities (60 percent) in Michigan. Deaths from vehicular collisions were about 15 percent of total mortality (25 percent of the human-caused mortality) and showed no trend over this six-year period. Deaths from illegal killing constituted 38 percent of all mortalities (65 percent of the human-caused mortality) over the period. From 1999 through 2001 illegal killings were 31 percent of the mortalities, but this

increased to 42 percent during the 2002 through 2004 bioyears (Beyer unpublished data 2005),

North-central Minnesota data from 16 diagnosed mortalities of radio-collared wolves over a 12-year period (1994–2005) show that human-causes resulted in 69 percent of the diagnosed mortalities. This includes 1 wolf accidentally snared, 2 vehicle collisions, and 8 (50 percent of all diagnosed mortalities) that were shot (Del Giudice in litt. 2005). However, this data set of only 16 mortalities over 12 years is too small for reliable comparison to Wisconsin and Michigan data.

A smaller mortality dataset is available from a 1987–1991 study of wolves in, and adjacent to, Minnesota's Voyageurs National Park, along the Canadian border. Of 10 diagnosed mortalities, illegal killing outside the Park was responsible for a minimum of 60 percent of the deaths (Gogan *et al.* 2004, p. 22).

Two Minnesota studies provide some limited insight into the extent of human-caused wolf mortality before and after the species' listing. On the basis of bounty data from a period that predated wolf protection under the Act by 20 years, Stenlund (1955, p. 33) found an annual human-caused mortality rate of 41 percent. Fuller (1989, pp. 23–24) provided 1980–86 data from a north-central Minnesota study area and found an annual human-caused mortality rate of 29 percent, a figure that includes 2 percent mortality from legal depredation control actions. Drawing conclusions from comparisons of these two studies, however, is difficult due to the confounding effects of habitat quality, exposure to humans, prey density, differing time periods, and vast differences in study design. Although these figures provide support for the contention that human-caused mortality decreased after the wolf's protection under the Act, it is not possible at this time to determine if human-caused mortality (apart from mortalities from depredation control) has significantly changed over the 30-year period that the gray wolf has been listed as threatened or endangered.

Wolves were largely eliminated from the Dakotas in the 1920s and 1930s and were rarely reported from the mid-1940s through the late 1970s. Ten wolves were killed in these two States from 1981 to 1992 (Licht and Fritts 1994, pp. 76–77). Six more were killed in North Dakota since 1992, with four of these mortalities occurring in 2002 and 2003; in 2001, one wolf was killed in Harding County in extreme northwestern South Dakota. The number of reported sightings of gray wolves in North Dakota is increasing. From 1993–98, six wolf depredation reports were investigated in North Dakota, and adequate signs were found to verify the presence of wolves in two of the cases. A den with pups was also documented in extreme north-central North Dakota near the Canadian border in 1994. From 1999–2003, 16 wolf sightings/depredation incidents in North Dakota were reported to USDA—APHIS—Wildlife Services, and 9 of these incidents were verified. Additionally, one North Dakota wolf sighting was confirmed in early 2004, and two wolf depredation incidents were verified north of Garrison in late 2005. USDA—APHIS—Wildlife Services also confirmed a wolf sighting along the Minnesota border near Gary, South Dakota, in 1996, and a trapper with the South Dakota Game, Fish, and Parks Department sighted a lone wolf in the western Black Hills in 2002. Several other unconfirmed sightings have been reported from these States, including two reports in South Dakota in 2003. Wolves killed in North and South Dakota are most often shot by hunters after being mistaken for coyotes, or were killed by vehicles. The 2001 mortality in South Dakota and one of the 2003 mortalities in North Dakota were caused by M–44 devices that had been legally set in response to complaints about coyotes.

In and around the core recovery areas in the Midwest, a continuing increase in wolf mortalities from vehicle collisions, both in actual numbers and as a percent of total diagnosed mortalities, is expected as wolves continue their colonization of areas with more human developments and a denser network of roads and vehicle traffic. In addition, the growing wolf populations in Wisconsin and Michigan are producing greater numbers of dispersing individuals each year, and this also will contribute to increasing numbers of wolf-vehicle collisions. This increase would be unaffected by a removal of WGL DPS wolves from the protections of the Act.

In those areas of the WGL DPS that are beyond the areas currently occupied by wolf packs in Minnesota, Wisconsin, and the UP, we expect that human-caused wolf mortality in the form of vehicle collisions, shooting, and trapping have been removing all, or nearly all, the wolves that disperse into these areas. We expect this to continue after Federal delisting. Road densities are high in these areas, with numerous interstate highways and other freeways and high-speed thoroughfares that are extremely hazardous to wolves attempting to move across them. Shooting and trapping of wolves also is likely to continue as a threat to wolves in these areas for several reasons. Especially outside of Minnesota, Wisconsin, and the UP, hunters will not expect to encounter wolves, and may easily mistake them for coyotes from a distance, resulting in unintentional shootings.

It is important to note that, despite the difficulty in measuring the extent of illegal killing of wolves, all sources of wolf mortality, including legal (e.g., depredation control) and illegal human-caused mortality, have not been of sufficient magnitude to stop the continuing growth of the wolf population in Wisconsin and Michigan, nor to cause a wolf population decline in Minnesota. This indicates that total gray wolf mortality does not threaten the continued viability of the wolf population in these three States, or in the WGL DPS.

Predation summary—The high reproductive potential of wolves allows wolf populations to withstand relatively high mortality rates, including human-caused mortality. The principle of compensatory mortality is believed to occur in wolf populations. This means that human-caused mortality is not simply added to ''natural'' mortality, but rather replaces a portion of it. For example, some of the wolves that are killed during depredation control actions would have otherwise died during that year from disease, intraspecific strife, or starvation. Thus, the addition of intentional killing of wolves to a wolf population will reduce the mortality rates from other causes on the population. Based on 19 studies by other wolf researchers, Fuller *et al.* (2003, pp. 182–186) concludes that human-caused mortality can replace about 70 percent of other forms of mortality.

Fuller *et al.* (2003, p. 182 Table 6.8) has summarized the work of various researchers in estimating mortality rates, especially human harvest, that would result in wolf population stability or decline. They provide a number of human-caused and total mortality rate estimates and the observed population effects in wolf populations in the United States and Canada. While variability is apparent, in general, wolf populations increased if their total average annual mortality was 30 percent or less, and populations decreased if their total average annual mortality was 40 percent or more. Four of the cited studies showed wolf population stability or increases with human-caused mortality rates of 24 to 30 percent. The clear conclusion is that a wolf population with high pup productivity—the normal situation in a wolf population—can

withstand levels of overall and of human-caused mortality without suffering a long-term decline in numbers.

The wolf populations in Minnesota, Wisconsin, and Michigan will stop growing when they have saturated the suitable habitat and are curtailed in less suitable areas by natural mortality (disease, starvation, and intraspecific aggression), depredation management, incidental mortality (e.g., road kill), illegal killing, and other means. At that time, we should expect to see population declines in some years followed by short-term increases in other years, resulting from fluctuations in birth and mortality rates. Adequate wolf monitoring programs, however, as described in the Michigan, Wisconsin, and Minnesota wolf management plans are likely to identify high mortality rates and/or low birth rates that warrant corrective action by the management agencies. The goals of all three State wolf management plans are to maintain wolf populations well above the numbers recommended in the Federal Eastern Recovery Plan to ensure long-term viable wolf populations. The State management plans recommend a minimum wolf population of 1,600 in Minnesota, 350 in Wisconsin, and 200 in Michigan.

Despite human-caused mortalities of wolves in Minnesota, Wisconsin, and Michigan, these wolf populations have continued to increase in both numbers and range. If wolves in the WGL DPS are delisted, as long as other mortality factors do not increase significantly and monitoring is adequate to document, and if necessary counteract, the effects of excessive human-caused mortality should that occur, the Minnesota-Wisconsin-Michigan wolf population will not decline to nonviable levels in the foreseeable future as a result of human-caused killing or other forms of predation either within the core wolf populations or in all other parts of the DPS. Therefore, we conclude that predation, including all forms of human-caused mortality, will not be a sufficient future threat to cause the WGL DPS gray wolves to be in danger of extinction in the foreseeable future in all or a significant portion of the range within the WGL DPS

D. The inadequacy of existing regulatory mechanisms.

For the reasons described in the following section, the Service has determined that over a significant portion of the WGL DPS range, there are adequate regulatory mechanisms to ensure that this population of gray wolves is neither threatened nor endangered.

Regulatory Mechanisms in Minnesota, Wisconsin, and Michigan

State Wolf Management Planning

During the 2000 legislative session, the Minnesota Legislature passed wolf management provisions addressing wolf protection, taking of wolves, and directing MN DNR to prepare a wolf management plan. The MN DNR revised a 1999 draft wolf management plan to reflect the legislative action of 2000, and completed the Minnesota Wolf Management Plan (MN Plan) in early 2001 (MN DNR 2001, pp. 8–9).

The Wisconsin Natural Resources Board approved the Wisconsin Wolf Management Plan in October 1999 (WI Plan). In 2004 and 2005 the Wisconsin Wolf Science Advisory Committee and the Wisconsin Wolf Stakeholders group reviewed the 1999 Plan, and the Science Advisory Committee subsequently developed updates and recommended modifications to the 1999 Plan. The WI DNR presented the Plan updates and modifications to the Wisconsin Natural Resources Board on June 28, 2006, and the NRB approved them at that time, with the understanding that some numbers would be updated and an additional reference document would be added (Holtz in litt. 2006). The updates were completed and received final NRB approval on November 28, 2006 (WI DNR 2006a, p. 1).

In late 1997, the Michigan Wolf Recovery and Management Plan (MI Plan) was completed and received the necessary State approvals. However, it is primarily focused on wolf recovery, rather than long-term management of a large wolf population and the conflicts that result as a consequence of successful wolf restoration. In 2006 the MI DNR convened a Michigan Wolf Management Roundtable committee (Roundtable) to provide guiding principles to the DNR on changes and revisions to the 1997 Plan and to guide management of Michigan wolves and wolf-related issues following Federal delisting of the species. The MI DNR will rely heavily on those guiding principles as it drafts a new wolf management plan. The Roundtable is composed of representatives from 20 Michigan stakeholder interests in wolf recovery and management, and its membership is roughly equal in numbers from the UP and the LP. During 2006, the Roundtable provided its ''Recommended Guiding Principles for Wolf Management in Michigan'' to the DNR in November (Michigan Wolf Management Roundtable 2006. p. 2). The first public draft of the revised MI Plan is expected to be available for public review and comment in March 2007, and the plan should be completed in late 2007 (Hogrefe in litt. 2006). *See* The Michigan Wolf Management Plan section below for a detailed description of the efforts of the Roundtable.

The Minnesota Wolf Management Plan

The Minnesota Plan is based, in part, on the recommendations of a State wolf management roundtable (MN DNR 2001, Appendix V) and on a State wolf management law enacted in 2000 (MN DNR 2001, Appendix I). This law and the Minnesota Game and Fish Laws constitute the basis of the State's authority to manage wolves. The Plan's stated goal is ''to ensure the long-term survival of wolves in Minnesota while addressing wolf-human conflicts that inevitably result when wolves and people live in the same vicinity'' (MN DNR 2001, p. 2). It establishes a minimum goal of 1,600 wolves in the State. Key components of the plan are population monitoring and management, management of wolf depredation of domestic animals, management of wolf prey, enforcement of laws regulating take of wolves, public education, and increased staffing to accomplish these actions. Following delisting, Minnesota DNR's management of wolves would differ from their current management while listed as threatened under the Act. Most of these differences deal with the control of wolves that attack or threaten domestic animals.

The Minnesota Plan divides the State into two wolf management zones—Zones A and B (see Figure 2 below). Zone A corresponds to Federal Wolf Management Zones 1 through 4 (approximately 30,000 sq mi (48,000 sq km) in northeastern Minnesota) in the Service's Eastern Recovery Plan, whereas Zone B constitutes zone 5 in the Eastern Recovery Plan (MN DNR 2001, pp. 19–20 and Appendix III; USFWS 1992, p. 72). Within Zone A, wolves would receive strong protection by the State, unless they were involved in attacks on domestic animals. The rules governing the take of wolves to protect domestic animals in Zone B would be less protective than in Zone A.

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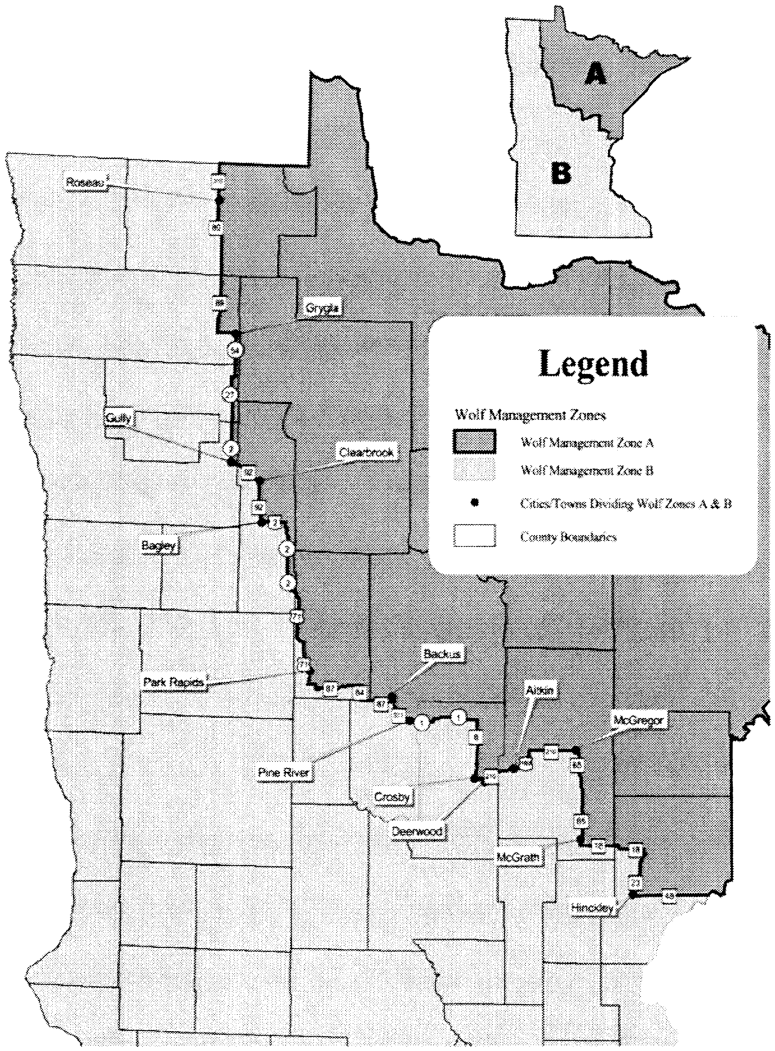
Figure 2. Minnesota wolf management zones.



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The MN DNR plans to allow wolf numbers and distribution to naturally expand, with no maximum population goal, and if any winter population estimate is below 1,600 wolves, it would take actions to ''assure recovery'' to 1,600 wolves (MN DNR 2001 p. 19). The MN DNR will continue to monitor wolves in Minnesota to determine whether such intervention is necessary. The MN DNR will conduct a statewide population survey in the first and fifth years after delisting and at subsequent five-year intervals. In addition to these statewide population surveys, MN DNR annually reviews data on depredation incident frequency and locations provided by Wildlife Services and winter track survey indices (*see* Erb 2005) to help ascertain annual trends in wolf population or range (MN DNR 2001, p. 18–19).

Minnesota (MN DNR 2001, pp. 21–24, 27–28) plans to reduce or control illegal mortality of wolves through education, increased enforcement of the State's wolf laws and regulations, by discouraging new road access in some areas, and by maintaining a depredation control program that includes compensation for livestock losses. The MN DNR plans to use a variety of methods to encourage and support education of the public about the effects of wolves on livestock, wild ungulate populations, and human activities and the history and ecology of wolves in the State (MN DNR 2001, pp. 29–30). These are all measures that have been in effect for years in Minnesota, although ''increased enforcement'' of State laws against take of wolves would replace enforcement of the Act's take prohibitions. Financial compensation for livestock losses has been increased in recent years to the full market value of the animal, replacing previous caps of $400 and $750 per animal (MN DNR 2001, p. 24). We do not expect the State's efforts will result in the reduction of illegal take of wolves from existing levels, but we believe these measures will be crucial in ensuring that illegal mortality does not significantly increase following Federal delisting.

The likelihood of illegal take increases in relation to road density and human population density, but changing attitudes towards wolves may allow them to survive in areas where road and human densities were previously thought to be too high (Fuller *et al.* 2003, p. 181). The MN DNR does not plan to reduce current levels of road access, but would encourage managers

of land areas large enough to sustain one or more wolf packs to ''be cautious about adding new road access that could exceed a density of one mile of road per square mile of land, without considering the potential effect on wolves'' (MN DNR 2001, pp. 27–28).

Under Minnesota law, the illegal killing of a wolf is a gross misdemeanor and is punishable by a maximum fine of $3,000 and imprisonment for up to one year. The restitution value of an illegally killed wolf is $2,000 (MN DNR 2001, p.29). The MN DNR acknowledges that increased enforcement of the State's wolf laws and regulations would be dependent on increases in staff and resources, additional cross-deputization of tribal law enforcement officers, and continued cooperation with Federal law enforcement officers. They specifically propose after delisting to add three Conservation Officers ''strategically located within current gray wolf range in Minnesota'' whose priority duty would be to implement the gray wolf management plan (MN DNR 2001, pp. 29, 32).

Minnesota DNR will consider wolf population management measures, including public hunting and trapping seasons and other methods, in the future. However, State law and the Minnesota Plan state that such consideration will occur no sooner than five years after Federal delisting, and there would be opportunity for full public comment on such possible changes at that time (Minnesota Statutes 97B.645 Subdiv. 9, see MN DNR 2001 Appendix 1, p. 6; MN DNR 2001, p. 20) The Minnesota Plan requires that these population management measures have to be implemented in such a way to maintain a statewide late-winter wolf population of at least 1,600 animals (MN DNR 2001, pp. 19–20), well above the Federal Recovery Plan's 1250–1400 for the State (USFWS 1992, p. 28).

Depredation Control in Minnesota

While federally-protected as a threatened species in Minnesota (since their 1978 reclassification), wolves that have attacked domestic animals have been killed by designated government employees under the authority of a special regulation (50 CFR 17.40(d)) under section 4(d) of the Act. However, no control of depredating wolves was allowed in Federal Wolf Management Zone 1, comprising about 4,500 sq mi (7,200 sq km) in extreme northeastern Minnesota (USFWS 1992, p. 72). In Federal Wolf Management Zones 2 through 5, employees or agents of the Service (including USDA–APHIS—Wildlife Services) have taken wolves in response to depredations of domestic animals within one-half mile of the depredation site. Young-of-the-year captured on or before August 1 must be released. The regulations that allow for this take (50 CFR 17.40(d)(2)(i)(B)(4)) do not specify a maximum duration for depredation control, but Wildlife Services personnel have followed internal guidelines under which they trap for no more than 10–15 days, except at sites with repeated or chronic depredation, where they may trap for up to 30 days (Paul pers. comm. 2004).

During the period from 1980–2005, the Federal Minnesota wolf depredation control program euthanized from 20 (in 1982) to 216 (in 1997) gray wolves annually. Annual averages (and percentage of statewide population) were 30 (2.2 percent) wolves killed from 1980 to 1984, 49 (3.0 percent) from 1985 to 1989, 115 (6.0 percent) from 1990 to 1994, and 152 (6.7 percent) from 1995 to 1999. During 2000–05 an average of 128 wolves (4.2 percent of the wolf population, based on the 2003–2004 statewide estimate) were killed under the program annually. Since 1980, the lowest annual percentage of Minnesota wolves killed under this program was 1.5 percent in 1982; the highest percentage was 9.4 in 1997 (Paul 2004, pp. 2–7; 2006, p. 1).

This level of wolf removal for depredation control has not interfered with wolf recovery in Minnesota, although it may have slowed the increase in wolf numbers in the State, especially since the late-1980s, and may be contributing to the possibly stabilized Minnesota wolf population suggested by the 2003–04 estimate (see additional information in Minnesota Recovery). Minnesota wolf numbers grew at an average annual rate of nearly 4 percent between 1989 and 1998 while the depredation control program was taking its highest percentages of wolves (Paul 2004, pp. 2–7).

Under a Minnesota statute, the Minnesota Department of Agriculture (MDA) compensates livestock owners for full market value of livestock that wolves have killed or severely injured. A university extension agent or conservation officer must confirm that wolves were responsible for the depredation. The agent or officer also evaluates the livestock operation for conformance to a set of Best Management Practices (BMPs) designed to minimize wolf depredation and provides operators with an itemized list of any deficiencies relative to the BMPs (MN DNR 2001, p. 24). The Minnesota statute also requires MDA to periodically update its BMPs to incorporate new practices that it finds would reduce wolf depredation (Minnesota Statutes 2005, Section 3.737, subdivision 5).

Post-Delisting Depredation Control in Minnesota

Following Federal delisting, depredation control will be authorized under Minnesota State law and conducted in conformance with the Minnesota Wolf Management Plan (MN DNR 2001). The Minnesota Plan divides the State into Wolf Management Zones A and B. Zone A is composed of Federal Wolf Management Zones 1–4, covering 30,728 sq mi (49,452 sq km), approximately the northeastern third of the State. Zone B is identical to the current Federal Wolf Management Zone 5, and contains the 54,603 sq mi (87,875 sq km.) that make up the rest of the State (MN DNR 2001, pp. 19–20 and Appendix III; USFWS 1992, p. 72). The statewide survey conducted during the winter of 2003–04 estimated that there were approximately 2,570 wolves in Zone A and 450 in Zone B (Erb in litt. 2005). As discussed in Recovery Criteria, the Federal planning goal is 1251–1400 wolves for Zones 1–4 and no wolves in Zone 5 (USFWS 1992, p. 28).

In Zone A wolf depredation control is limited to situations of (1) immediate threat and (2) following verified loss of domestic animals. In this zone, if DNR verifies that a wolf destroyed any livestock, domestic animal, or pet, and if the owner requests wolf control be implemented, trained and certified predator controllers may take wolves within a one-mile radius of the depredation site (depredation control area) for up to 60 days. In contrast, in Zone B, predator controllers may take wolves for up to 214 days after MN DNR opens a depredation control area, depending on the time of year. Under State law, the DNR may open a control area in Zone B anytime within five years of a verified depredation loss upon request of the landowner, thereby providing more of a preventative approach than is allowed in Zone A, in order to head off repeat depredation incidents (MN DNR 2001, p. 22).

State law and the Minnesota Plan will also allow for private wolf depredation control throughout the State. Persons may shoot or destroy a gray wolf that poses ''an immediate threat'' to their livestock, guard animals, or domestic animals on lands that they own, lease, or occupy. Immediate threat is defined as ''in the act of stalking, attacking, or killing.'' This does not include trapping because traps cannot be placed in a manner such that they trap only wolves in the act of stalking, attacking, or killing. Owners of domestic pets may also kill wolves posing an immediate

threat to pets under their supervision on lands that they do not own or lease, although such actions are subject to local ordinances, trespass law, and other applicable restrictions. The MN DNR will investigate any private taking of wolves in Zone A (MN DNR 2001, p. 23).

To protect their domestic animals in Zone B, individuals do not have to wait for an immediate threat or a depredation incident in order to take wolves. At anytime in Zone B, persons who own, lease, or manage lands may shoot wolves on those lands to protect livestock, domestic animals, or pets. They may also employ a predator controller to trap a gray wolf on their land or within one mile of their land (with permission of the landowner) to protect their livestock, domestic animals, or pets (MN DNR 2001, p. 23–24).

The Minnesota Plan will also allow persons to harass wolves anywhere in the State within 500 yards of ''people, buildings, dogs, livestock, or other domestic pets or animals''. Harassment may not include physical injury to a wolf.

Depredation control will be allowed throughout Zone A, which includes an area (Federal Wolf Management Zone 1) where such control has not been permitted under the Act's protection. Depredation in Zone 1, however, has been limited to 3 to 6 reported incidents per year, mostly of wolves killing dogs (Paul pers. comm. 2004), although some dog kills in this zone probably go unreported. There are few livestock in Zone 1; therefore, the number of verified future depredation incidents in that Zone is expected to be low, resulting in a correspondingly low number of depredating wolves being killed there after delisting.

The final change in Zone A is the ability for owners/lessees to respond to situations of immediate threat by shooting wolves in the act of stalking, attacking, or killing livestock or other domestic animals. We believe this is not likely to result in the killing of many additional wolves, as opportunities to shoot wolves ''in the act'' will likely be few and difficult to successfully accomplish, a belief shared by the most experienced wolf depredation agent in the lower 48 States (Paul in litt. 2006, p. 5). It is also possible that illegal killing of wolves in Minnesota will decrease, because the expanded options for legal control of problem wolves may lead to an increase in public tolerance for wolves (Paul in litt. 2006, p. 5).

Within Zone B, State law and the Minnesota Plan provide broad authority to landowners and land managers to shoot wolves at any time to protect their livestock, pets, or other domestic animals on land owned, leased, or managed by the individual. Such takings can occur in the absence of wolf attacks on the domestic animals. Thus, the estimated 450 wolves in Zone B could be subject to substantial reduction in numbers, and at the extreme, wolves could be eliminated from Zone B. However, there is no way to reasonably evaluate in advance the extent to which residents of Zone B will use this new authority, nor how vulnerable Zone B wolves will be. Thus, any estimate of future wolf numbers in Zone B would be highly speculative at this time. The limitation of this broad take authority to Zone B is fully consistent with the Federal Recovery Plan's advice that wolves should be restored to the rest of Minnesota but not to Zone B (Federal Zone 5) because that area ''is not suitable for wolves'' (USFWS 1992, p. 20). The Federal Recovery Plan envisioned that the Minnesota numerical recovery goal would be achieved solely in Zone A (Federal Zones 1–4) (USFWS 1992, p. 28), and that has occurred. Wolves outside of Zone A are not necessary to the establishment and long-term viability of a self-sustaining wolf population in the State, and therefore there is no need to establish or maintain a wolf population in Zone B. Therefore, there is no need to maintain significant protection for wolves in Zone B in order to maintain a Minnesota wolf population that continues to satisfy the Federal recovery goals after Federal delisting.

This expansion of depredation control activities will not threaten the continued conservation of wolves in the State or the long-term viability of the wolf population in Zone A, the significant part of wolf range in Minnesota. Significant changes in wolf depredation control under State management will primarily be restricted to Zone B, which is outside of the area necessary for wolf recovery (USFWS 1992, pp. 20, 28). Furthermore, wolves may still persist in Zone B despite the likely increased take there. The Eastern Timber Wolf Recovery Team concluded that the changes in wolf management in the State's Zone A would be ''minor'' and would not likely result in ''significant change in overall wolf numbers in Zone A.'' They found that, despite an expansion of the individual depredation control areas and an extension of the control period to 60 days, depredation control will remain ''very localized'' in Zone A. The requirement that such depredation control activities be conducted only in response to verified wolf depredation in Zone A played a key role in the team's evaluation (Peterson in litt. 2001).

The proposed changes in the control of depredating wolves in Minnesota under State management emphasize the need for post-delisting monitoring. Minnesota will continue to monitor wolf populations throughout the State and will also monitor all depredation control activities in Zone A (MN DNR 2001, p. 18). These and other activities contained in their plan will be essential in meeting their population goal of a minimum statewide winter population of 1,600 wolves, which exceeds the 1992 Federal Recovery Plan's criteria of 1,251 to 1,400 wolves (USFWS 1992, p. 28).

The Wisconsin Wolf Management Plan

Both the Wisconsin and Michigan Wolf Management Plans are designed to manage and ensure the existence of wolf populations in the States as if they are isolated populations and are not dependent upon immigration of wolves from an adjacent State or Canada. We support this approach and believe it provides strong assurances that the gray wolf in both States will remain a viable component of the WGL DPS for the foreseeable future.

The WI Plan allows for differing levels of protection and management within four separate management zones (*see* figure 3). The Northern Forest Zone (Zone 1) and the Central Forest Zone (Zone 2) now contain most of the wolf population, with less than 5 percent of the Wisconsin wolves in Zones 3 and 4 (Wydeven *et al.* 2006, p. 27–29). Zones 1 and 2 contain all the larger unfragmented areas of suitable habitat (see Wolf Range Ownership and Protection, above), so most of the State's wolf packs will continue to inhabit those parts of Wisconsin for the foreseeable future. The varying levels of protection provided across these zones are fully consistent with our determination of the SPR in Wisconsin. The inclusion of all primary and secondary habitat in Zones 1 and 2, and the lack of suitable habitat in Zones 3 and 4 (Wydeven *et al.* 1999, pp. 46–49), indicate that Zones 1 and 2 constitute the SPR in Wisconsin and preclude the need for substantial wolf protection outside these zones.

At the time the Wisconsin Wolf Management Plan was completed, it recommended immediate reclassification from State-endangered to State-threatened status, because Wisconsin's wolf population had already exceeded its reclassification criterion of 80 wolves for 3 years. That State reclassification occurred in 1999,

after the population exceeded that level for 5 years. The Wisconsin Plan further recommends the State manage for a gray wolf population of 350 wolves outside of Native American reservations, and specifies that the species should be delisted by the State once the population reaches 250 animals outside of reservations. The species was proposed for State delisting in late 2003, and the State delisting process was completed in 2004. Upon State delisting, the species was classified as a ''protected nongame species,'' a designation that continues State prohibitions on sport hunting and trapping of the species (Wydeven and Jurewicz 2005, p. 1; WI DNR 2006b, p. 71). The Wisconsin Plan includes criteria that would trigger State relisting to threatened (a decline to fewer than 250 wolves for 3 years) or endangered status (a decline to fewer than 80 wolves for 1 year). The Wisconsin Plan will be reviewed annually by the Wisconsin Wolf Advisory Committee and will be reviewed by the public every 5 years.

The WI Plan was updated during 2004–06 to reflect current wolf numbers, additional knowledge, and issues that have arisen since its 1999 completion. This update is in the form of text changes, revisions to two appendices, and the addition of a new appendix to the 1999 plan, rather than as a major revision to the plan. Several components of the plan that are key to our delisting evaluation are unchanged. The State wolf management goal of 350 animals and the boundaries of the four wolf management zones remain the same as in the 1999 Plan. The updated 2006 Plan continues access management on public lands and the protection of active den sites. However, protection of pack rendezvous sites is no longer considered to be needed in areas where wolves have become well established, due to the transient nature of these sites and the larger wolf population. The updated Plan states that rendezvous sites may need protection in areas where wolf colonization is still underway or where pup survival is extremely poor, such as in northeastern Wisconsin (WI DNR 2006a, p. 17). The guidelines for the wolf depredation control program did not undergo significant alteration during the update process. The only substantive change to depredation control practices is to expand the area of depredation control trapping in Zones 1 and 2 to 1 mi (1.6 km) outward from the depredation site, replacing the previous 0.5 mi (0.8 km) radius trapping zone (WI DNR 2006a, pp. 3–4).

An important component of the WI Plan is the annual monitoring of wolf populations by radio collars and winter track surveys in order to provide comparable annual data to assess population size and growth for at least 5 years after Federal delisting. This monitoring will include health monitoring of captured wolves and necropsies of dead wolves that are found. Wolf scat will be collected and analyzed to monitor for canine viruses and parasites. Health monitoring will be part of the capture protocol for all studies that involve the live capture of Wisconsin wolves (WI DNR 2006a, p. 14).

Cooperative habitat management will be promoted with public and private landowners to maintain existing road densities in Zones 1 and 2, protect wolf dispersal corridors, and manage forests for deer and beaver (WI DNR 1999, pp. 4, 22–23; 2006a, pp. 15–17). Furthermore, in Zone 1, a year-around prohibition on tree harvest within 330 feet of den sites, and seasonal restrictions to reduce disturbance within one-half mile of dens, will be DNR policy on public lands and will be encouraged on private lands (WI DNR 1999, p. 23; 2006a, p. 17).

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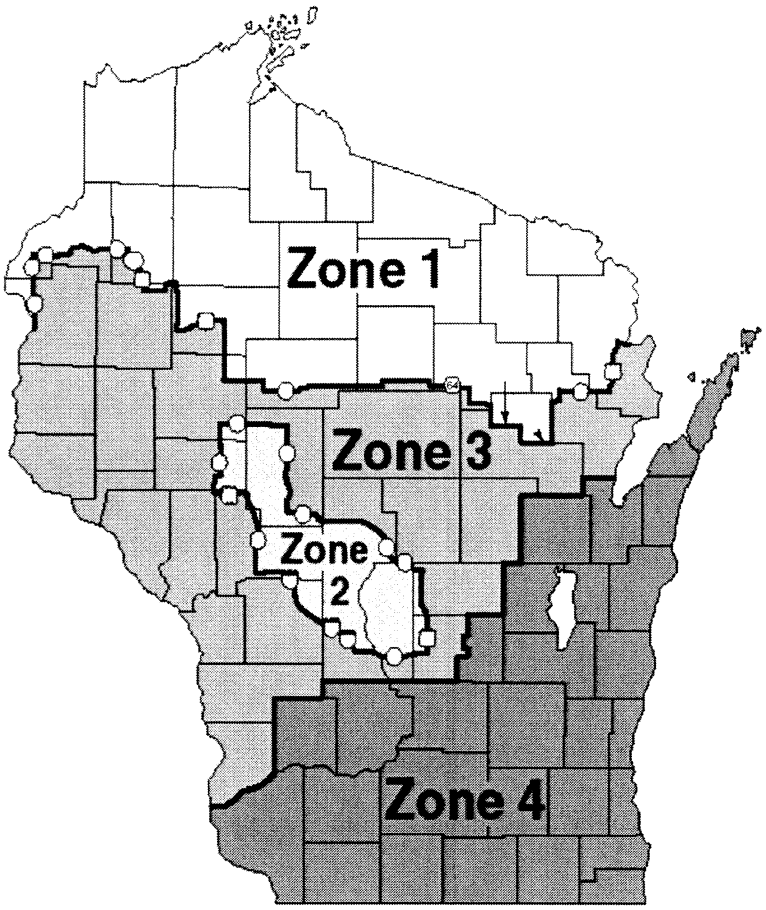
Figure 3. Wisconsin wolf management zones.



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The 1999 WI Plan contains, and the 2006 update retains, other recommendations that will provide protection to assist in maintenance of a viable wolf population in the State: (1) Continue the protection of the species as a ''protected wild animal'' with penalties similar to those for unlawfully killing large game species (fines of $1,000–2,000, loss of hunting privileges for 3–5 years, and a possible 6-month jail sentence), (2) maintain closure zones where coyotes cannot be shot during deer hunting season in Zone 1, (3) legally protect wolf dens under the Wisconsin Administrative Code, (4) require State permits to possess a wolf or wolf-dog hybrid, and (5) establish a restitution value to be levied in addition to fines and other penalties for wolves that are illegally killed (WI DNR 1999, pp. 21, 27–28, 30–31; 2006a, pp. 3–4).

The 2006 update of the WI Plan continues to emphasize the need for public education efforts that focus on living with a recovered wolf population, ways to manage wolves and wolf-human conflicts, and the ecosystem role of wolves. The Plan continues the State reimbursement for depredation losses (including dogs and missing calves), citizen stakeholder involvement in the wolf management program, and coordination with the Tribes in wolf management and investigation of illegal killings (WI DNR 1999, pp. 24, 28–29; 2006a, pp. 22–23).

Given the decline and ultimate termination in Federal funding for wolf monitoring in the future, Wisconsin and Michigan DNRs are seeking an effective, yet cost-efficient, method for detecting wolf population changes to replace the current labor-intensive and expensive monitoring protocols. Both DNRs have considered implementing a ''Minnesota-type'' wolf survey. Such methodology is less expensive for larger wolf populations than the intensive radio monitoring/track survey methods currently used by the two States, and if the wolf population continues to grow there will be increased need to develop and implement a less expensive method. However, each State conducted independent field testing of the Minnesota method several years ago and found that method to be unsuitable for both States' lower wolf population

density and uneven pack distribution. In both States the application of that method resulted in an overestimate of wolf abundance, possibly due to the more patchy distribution of wolves and packs in these States and the difficulty in accurately delineating occupied wolf range in areas where wolf pack density is relatively low in comparison to Minnesota and where agricultural lands are interspersed with forested areas (Wiedenhoeft 2005, pp. 11–12; Beyer in litt. 2006b).

Both States remain interested in developing accurate but less costly alternate survey methods. WI DNR might test other methods following Federal delisting, but the State will not replace its traditional radio tracking/snow tracking surveys during the five year post-delisting monitoring period (Wydeven in litt. 2006b). The 2006 update to the Wisconsin Wolf Management Plan has not changed the WI DNR's commitment to annual wolf population monitoring in a manner that ensures accurate and comparable data (WI DNR 1999, pp. 19–20), and we are confident that adequate annual monitoring will continue for the foreseeable future.

Depredation Control in Wisconsin

The rapidly expanding Wisconsin wolf population has resulted in increased need for depredation control. From 1979 through 1989, there were only five cases (an average of 0.4 per year) of verified wolf depredations in Wisconsin. Between 1990 and 1997, there were 27 verified depredation incidents in the State (an average of 3.4 per year), and 82 incidents (an average of 16.4 per year) occurred from 1998–2002. Depredation incidents increased to 23 cases (including 50 domestic animals killed and 4 injured) in 2003, and to 35 cases (53 domestic animals killed, 3 injured, and 6 missing) in 2004 (Wydeven and Wiedenhoeft 2004a, pp. 2–3, 7–8 Table 3; Wydeven *et al.* 2005b, p. 7). In 2005, depredation grew to 45 cases, with 53 domestic animals killed and 11 injured (Wydeven *et al.* 2006b, p. 7). The number of farms experiencing wolf depredations on livestock averaged 2.8 annually (range 0 to 8) during the 1990s, but jumped to an average of 14.0 per year during 2000–2005 (WI DNR 2006a, p. 19). During those five years an annual upward trend was evident, increasing from 10 in 2002, to 14 in 2003, to 22 in 2004, and to 25 in 2005 (WI DNR 2006a, p. 34).

A significant portion of depredation incidents in Wisconsin involve attacks on dogs engaged in bear hunting activities or dogs being trained in the field for hunting. In almost all cases, these have been hunting dogs that were being used for, or being trained for, hunting bears and bobcats at the time they were attacked. It is believed that the dogs entered the territory of a wolf pack and may have been close to a den, rendezvous site, or feeding location, thus triggering an attack by wolves defending their territory or pups. The frequency of attacks on hunting dogs has increased as the State's wolf population has grown. In 2004, 13 dogs involved in bear hunting or training were killed by wolves and 2 dogs not involved in hunting/training were killed. These incidents were believed to involve 7 different wolf packs, or 6 percent of the 108 packs in Wisconsin in the winter of 2003–2004. Preliminary data from 2006 through the middle of October show a continuation of increased wolf attacks on bear hunting dogs, with 20 killed and 5 injured by 8 separate wolf packs, 7 percent of the winter 2005–2006 packs. (*http://www.dnr.state.wi.us/org/land/er/mammals/wolf/dogdepred.htm*, accessed Nov. 21, 2006). While Wisconsin DNR compensates dog owners for mortalities and injuries to their dogs, DNR takes no action against the depredating pack unless the attack was on a dog that was leashed, confined, or under the owner's control on the owner's land. Instead, the DNR issues press releases to warn bear hunters and bear dog trainers of the areas where wolf packs have been attacking bear dogs (WI DNR 2005, p. 4) and provides maps and advice to hunters on the DNR Web site (see *http://www.dnr.state.wi.us/org/land/er/mammals/wolf/dogdepred.htm*).

Post-Delisting Depredation Control in Wisconsin

Following Federal delisting, wolf depredation control in Wisconsin will be carried out according to the 2006 Updated Wisconsin Wolf Management Plan (WI DNR 2006a, pp. 19–23), Wisconsin Guidelines for Conducting Depredation Control on Wolves (Wisconsin DNR 2005) which are being revised to conform to the 2006 Updated Plan, and any Tribal wolf management plans or guidelines that may be developed in the future for reservations in occupied wolf range. The 2006 updates have not significantly changed the 1999 State Plan, and the State wolf management goal of 350 wolves outside of Indian reservations (WI DNR 2006a, p. 3) is unchanged. Verification of wolf depredation incidents will continue to be conducted by USDA–APHIS–Wildlife Services, working under a cooperative agreement with WI DNR, or at the request of a Tribe, depending on the location of the suspected depredation incident. If determined to be a confirmed or probable depredation by a wolf or wolves, one or more of several options will be implemented to address the depredation problem. These options include technical assistance, loss compensation to landowners, translocation or euthanizing problem wolves, and private landowner control of problem wolves in some circumstances (WI DNR 2006a, pp. 3–4, 20–22).

Technical assistance, consisting of advice or recommendations to prevent or reduce further wolf conflicts, will be provided. This may also include providing to the landowner various forms of non-injurious behavior modification materials, such as flashing lights, noise makers, temporary fencing, and fladry. Monetary compensation is also provided for all verified and probable losses of domestic animals and for a portion of documented missing calves (WI DNR 2006a, pp. 22–23).

The WI DNR compensates livestock and pet owners for confirmed losses to depredating wolves. The compensation is made at full market value of the animal (up to a limit of $2500 for hunting dogs and pets) and can include veterinarian fees for the treatment of injured animals (WI DNR 2006c 12.54). Compensation costs have been funded from the endangered resources tax check-off and sales of the endangered resources license plates. Current Wisconsin law requires the continuation of the compensation payment for wolf depredation regardless of Federal listing or delisting of the species (WI DNR 2006c 12.50). In recent years annual depredation compensation payments have ranged from $18,630 to nearly $110,000 (WI DNR 2006a, p. 22–23, 29).

For depredation incidents in Wisconsin Zones 1 through 3, where all wolf packs currently reside, wolves may be trapped by Wildlife Services or WI DNR personnel and, if feasible, they are translocated and released at a point distant from the depredation site. If wolves are captured adjacent to an Indian reservation or a large block of public land the animals may be translocated locally to that area. As noted above, long-distance translocating of depredating wolves has become increasingly difficult in Wisconsin and is likely to be used infrequently in the future as long as the off-reservation wolf population is above 350 animals. In most wolf depredation cases where technical assistance and non-lethal methods of behavior modification are judged to be ineffective, wolves will be shot or trapped and euthanized by Wildlife Services or DNR personnel.

Trapping and euthanizing will be conducted within a 1 mi (1.6 km) radius of the depredation in Zones 1 and 2, and within a 5 mi (8 km) radius in Zone 3. There is no distance limitation for depredation control trapping in Zone 4, and all wolves trapped in Zone 4 will be euthanized, rather than translocated (WI DNR 2006a, pp. 22–23).

Following Federal delisting, Wisconsin landowners who have had a verified wolf depredation will be able to obtain limited-duration permits from WI DNR to kill a limited number of depredating wolves on land they own or lease. In addition, landowners and lessees of land statewide will be allowed to kill a wolf without obtaining a permit ''in the act of killing, wounding, or biting a domestic animal,'' and the incident must be reported to a conservation warden within 24 hours (WI DNR 2006a, pp. 22–23).

The updated Wisconsin Plan also envisions the possibility of intensive control management actions in sub-zones of the larger wolf management zones, but such actions, and the triggering events for them, have yet to be determined (WI DNR 2006a, pp. 22–23). These actions would be considered on a case-by-case basis to address specific problems, and would likely be carried out only in areas that lack suitable habitat, have extensive agricultural lands with little forest interspersion, in urban or suburban settings, and only when the State wolf population is well above the management goal of 350 wolves in late winter surveys. The use of intensive population management in small areas will be adapted as experience is gained with implementing and evaluating localized control actions (Wydeven pers. comm. 2006).

We have evaluated future lethal depredation control based upon verified depredation incidents over the last decade and the impacts of the implementation of similar lethal control of depredating wolves under 50 CFR 17.40(d) for Minnesota, 17.40(o) for Wisconsin and Michigan, and section 10(a)(1)(A) of the Act for Wisconsin and Michigan. Under those authorities, WI DNR and Wildlife Services trapped and euthanized 17 wolves in 2003, 24 in 2004, 32 (including several possible hybrids) in 2005, and 18 in 2006 (WI DNR 2006a, p. 32). (Although these lethal control authorities applied to Wisconsin and Michigan DNRs for only a portion of 2003 (April through December) and 2005 (all of January for both States; April 1 and April 19, for Wisconsin and Michigan respectively, through September 13), they covered nearly all of the verified wolf depredations during those years, and thus provide a reasonable measure of annual lethal depredation control. Lethal control authority only occurred for about 4 months in 2006.) For 2003, 2004, and 2005 this represents 5.1 percent, 6.4 percent, 7.4 percent (including the several possible wolf-dog hybrids), respectively, of the late winter population of Wisconsin wolves during the previous winter. Note that some of the wolves euthanized after August 1 were young-of-the-year who were not present during the late winter survey, so the cited percentages are overestimates. This level of lethal depredation control was followed by a wolf population increase of 11 percent from 2003 to 2004, 17 percent from 2004 to 2005, and 7 percent from 2005 to 2006 (Wydeven and Jurewicz 2005, p.5; Wydeven *et al* 2006a, p. 10). This provides strong evidence that this form and magnitude of depredation control will not adversely impact the viability of the Wisconsin wolf population. The locations of depredation incidents provide additional evidence that lethal control will not be an adverse impact on the State's wolf population. Most livestock depredations are caused by packs near the northern forest—farm land interface. Few depredations occur in core wolf range and in large blocks of public land. Thus, lethal depredation control actions will not impact most of the Wisconsin wolf population (WI DNR 2006a, p. 30).

One substantive change to lethal control that likely will result from Federal delisting is the ability of a small number of private landowners, whose farms have a history of recurring wolf depredation, to obtain DNR permits to kill depredating wolves (WI DNR 2006a, p. 23). We estimate that up to 3 wolves from each of 5 to 10 farms may be killed annually under these permits in the several years immediately after delisting. Because the late-winter 2005–06 Wisconsin wolf population was approaching 500 animals, the death of these 5 to 30 additional wolves—only 1 to 6 percent of the State wolves—would not affect the viability of the population. Another substantive change may be potential proactive trapping or ''intensive control'' of wolves in limited areas as described above. While it is not possible to estimate the number of wolves that might be killed via these actions, we are confident that they will not impact the long-term viability of the Wisconsin wolf population, because they will be carried out only if the State's late-winter wolf population exceeds 350 animals.

The State's current guidelines for conducting depredation control actions say that no control trapping will be conducted on wolves that kill ''dogs that are free-roaming, roaming at large, hunting, or training on public lands, and all other lands except land owned or leased by the dog owner'' (Wisconsin DNR 2005, p, 4). Because of these State-imposed limitations, we believe that lethal control of wolves depredating on hunting dogs will be rare, and therefore will not be a significant additional source of mortality in Wisconsin.

Lethal control of wolves that attack captive deer is included in the WI DNR depredation control program, because farm-raised deer are considered to be livestock under Wisconsin law (WI DNR 2005, p. 4; 2006c, 12.52). However, Wisconsin regulations for deer farms fencing have been strengthened, and it is unlikely that more than an occasional wolf will need to be killed to end wolf depredations inside deer farms in the foreseeable future. Claims for wolf depredation compensation are rejected if the claimant is not in compliance with regulations regarding farm-raised deer fencing or livestock carcass disposal (Wisconsin Statutes 90.20 & 90.21, WI DNR 2006c 12.54).

Data from verified wolf depredations in recent years indicate that depredation on livestock is likely to increase as long as the Wisconsin wolf population increases in numbers and range. Most large areas of forest land and public lands are included in Wisconsin Wolf Management Zones 1 and 2, and they have already been colonized by wolves. Therefore, new areas likely to be colonized by wolves in the future will be in Zones 3 and 4, where they will be exposed to much higher densities of farms, livestock, and residences. During the period from July 2004 through June 2005, 29 percent (8 of 28) of farms experiencing wolf depredation were in Zone 3, yet only 4 percent of the State wolf population occurs in this zone (Wydeven and Wiedenhoeft 2005, p. 3). Further expansion of wolves into Zone 3 would likely lead to an increase in depredation incidents and an increase in lethal control actions against Zone 3 wolves. However, these Zone 3 mortalities will have no impact on wolf population viability in Wisconsin because of the much larger wolf populations in Zones 1 and 2.

For the foreseeable future, the wolf population in Zones 1 and 2 will continue to greatly exceed the Federal recovery goal of 200 late winter wolves for an isolated population and 100 wolves for a subpopulation connected to the larger Minnesota population, regardless of the extent of wolf mortality from all causes in Zones 3 and 4. Ongoing annual wolf population monitoring by WI DNR will provide

timely and accurate data to evaluate the effects of wolf management under the Wisconsin Plan.

The possibility of a public harvest of wolves is acknowledged in the Wisconsin Wolf Management Plan and in plan update drafts (WI DNR 1999, Appendix D; 2006c, p. 23). However, the question of whether a public harvest will be initiated and the details of such a harvest are far from resolved. Public attitudes toward a wolf population in excess of 350 would have to be fully evaluated, as would the impacts from other mortalities, before a public harvest could be initiated. Establishing a public harvest would be preceded by extensive public input, including public hearing, and would require legislative authorization and approval by the Wisconsin Natural Resources Board. Because of the steps that must precede a public harvest of wolves and the uncertainty regarding the possibility of, and the details of, any such program, it is not possible to evaluate the potential impacts of the public harvest of wolves. Therefore, we consider public harvest of Wisconsin wolves to be highly speculative at this time. The Service will closely monitor any steps taken by States and/or Tribes within the WGL DPS to establish any public harvest of gray wolves during our post-delisting monitoring program. The fact that the Wisconsin Plan calls for State relisting of the wolf as a threatened species if the population falls to fewer than 250 for 3 years provides a strong assurance that any future public harvest is not likely to threaten the persistence of the population (WI DNR 1999, pp. 15–17). Based on wolf population data, the current Wisconsin Plan and the 2006 updates, we believe that any public harvest plan would continue to maintain the State wolf population well above the recovery goal of 200 wolves in late winter.

Michigan Wolf Management Plan

The 1997 Michigan Gray Wolf Recovery and Management Plan (MI Plan) (MI DNR 1997) describes the wolf recovery goals and management actions needed to achieve a viable wolf population in the UP of Michigan. It does not address the potential need for wolf recovery or management in the Lower Peninsula, nor wolf management within Isle Royale National Park (where the wolf population is fully protected by the National Park Service). Necessary wolf management actions detailed in the Michigan Plan include public education and outreach activities, annual wolf population and health monitoring, research, depredation control, and habitat management. As described above, MI DNR currently is in the process of revising its plan to enable more effective management of a recovered and expanding wolf population. The revision is expected to be completed in late 2007.

As with the WI Plan, the MI DNR has chosen to manage the State's wolves as though they are an isolated population that receives no genetic or demographic benefits from immigrating wolves. Therefore, although we do not know if the revised Michigan Plan will contain any long-term minimum numerical goal for wolves in the UP or NLP, as a result of written commitments from the MI DNR, as discussed below, we are confident that the State plan will have a goal of maintaining a wolf population that is large enough so as to be viable for the foreseeable future and will not have to be listed as threatened or endangered under either State or Federal law (Moritz in litt. 2006; Koch in litt. 2006a). The MI DNR has assured us that ''the new revised Plan will underscore commitments to wolf management already made in the 1997 plan.'' (Koch in litt. 2006b). We strongly support this approach, as it provides assurance that a viable wolf population will remain in the UP regardless of the future fate of wolves in Wisconsin or Ontario.

Until the MI Plan revision is completed, the 1997 Michigan Plan will remain in effect, as supplemented by additional guidance developed since 1997 to deal with aspects of wolf management and recovery not adequately covered in the 1997 Plan, such as ''Guidelines for Management and Lethal Control of Wolves Following Confirmed Depredation Events'' (MI DNR 2005a).

The 1997 Michigan Plan identifies wolf population monitoring as a priority activity (MI DNR 1997, pp. 21–22). As discussed previously, the size of the wolf population is determined annually by extensive radio and snow tracking surveys. Recently the Michigan DNR also conducted a field evaluation of a less expensive ''Minnesota-type'' wolf survey. However, similar to Wisconsin DNR's experience, the evaluation concluded that the method overestimated wolf numbers, and is not suitable for use on the State's wolf population as it currently is distributed (Beyer in litt. 2006b).

The MI DNR remains interested in developing accurate but less costly alternate survey methods, and in the winter of 2006–2007 is planning to implement a sampling approach to increase the efficiency of the survey based on an analysis by Potvin *et al.* (2005, p. 1668). The UP will be stratified into three sampling areas, and within each stratum the DNR will intensively survey roughly 40 to 50 percent of the wolf habitat area annually. Computer simulations have shown that such a geographically stratified monitoring program will produce unbiased and precise estimates of the total wolf population which can be statistically compared to estimates derived from the previous method to detect significant changes in the UP wolf population (Beyer in litt 2006b, see attachment by Drummer; Lederle in litt. 2006).

The 1997 Michigan Plan identifies 800 wolves as the estimated biological carrying capacity of suitable areas in the UP (MI DNR 1997, p. 17). ''Carrying capacity'' is the number of animals that an area is able to support over the long term; for wolves, it is primarily based on the availability of prey animals and competition from other wolf packs. Under the 1997 Michigan Plan, wolves in the State will be considered recovered when a sustainable population of at least 200 wolves is maintained for 5 consecutive years. The UP has had more than 200 wolves since the winter of 1999–2000. Therefore, Michigan reclassified wolves from endangered to threatened in June 2002, and the gray wolf became eligible for State delisting under the Michigan Plan's criteria in 2004. In Michigan, however, State delisting cannot occur until after Federal delisting; therefore we expect State delisting to be initiated in the near future. During the State delisting process, Michigan intends to amend its Wildlife Conservation Order to grant ''protected animal'' status to the gray wolf. That status would ''prohibit take, establish penalties, and restitution for violations of the Order, and detail conditions under which lethal depredation control measures could be implemented'' (Humphries in litt. 2004). Population management, except for depredation control, is not addressed in the 1997 Michigan Plan beyond statements that the wolf population may need to be controlled by lethal means at some future time.

Similar to the Wisconsin Plan, the 1997 Michigan Plan recommends high levels of protection for wolf den and rendezvous sites, whether on public or private land. The Plan recommends that most land uses be prohibited at all times within 330 feet (100 meters) of active sites. Seasonal restrictions (March through July) should be enforced within 0.5 mi (0.8 km) of these sites, to prevent high-disturbance activities, such as logging, from disrupting pup-rearing activities. These restrictions should remain in effect even after State delisting occurs (MI DNR 1997, pp. 26-

27), but they may be modified by the revision of the 1997 Plan, which is expected to be completed in late 2007.

The 1997 Michigan Plan calls for re-evaluation of the plan at 5-year intervals. The MI DNR initiated this re-evaluation process in 2001, with the appointment of a committee to evaluate wolf recovery and management. As a result of that review, MI DNR concluded that a revision of the 1997 Plan is needed, and a more formal review, including extensive stakeholder input, was recently initiated. Recognizing that wolf recovery has been achieved in Michigan, additional scientific knowledge has been gained, and new social issues have arisen since the 1997 Plan was drafted, the DNR intends the revised plan to be more of a wolf management document than a recovery plan. The DNR convened a Michigan Wolf Management Roundtable to assist in this endeavor. The Roundtable is a diverse group of 20 citizens drawn from organizations spanning the spectrum of those interested in, and impacted by, wolf recovery and management in Michigan, including Tribal entities and organizations focused on agriculture, hunting/trapping, the environment, animal protection, law enforcement and public safety, and tourism.

To help the Roundtable produce guiding principles that are based on the best biological and sociological data available, the MI DNR developed a ''Review of Social and Biological Science Relevant to Wolf Management in Michigan'' (Beyer *et al.* 2006). The MI DNR instructed the Roundtable to provide strategic guidance for the DNR's use in subsequent development of an operational wolf management plan. The Roundtable was asked to review the 1997 wolf management goal, to set priorities for management issues, and to recommend strategic goals or policies the DNR should use in addressing the management issues. The Roundtable was not asked to provide input regarding specific methods to achieve wolf management goals and objectives. The DNR's instructions specified the ''wolf management working goal'' currently is ''to establish and maintain a population of gray wolves in the Upper Peninsula at a level that (1) assures wolf population sustainability, (2) is consistent with available wolf habitat, and (3) is compatible with human land-use practices'' (Moritz in litt 2006, attachment pp. 1–2).

The Roundtable has provided this guidance to MI DNR in the form of a series of ''guiding principles'' that were developed by member consensus over a period of 10 days of meetings over a 5-month period. The Roundtable prefaced their guidance by stating that wolf management should have a goal of maintaining ''acceptable levels of positive and negative [wolf-human] interactions while ensuring the long-term viability of a wolf population'' (Michigan Wolf Management Roundtable 2006, p. 5). Because the factors that influence the levels of wolf-human interactions vary across geographic scales and over time, the Roundtable felt that setting numerical goals for large geographical areas would be unwise. Instead, the Roundtable believes that local and case-by-case management would be better able to enhance opportunities for positive interactions and reduce negative interactions. Therefore, in place of recommending a numerical goal for the Michigan wolf population, the Roundtable provided a series of general guiding principles for the DNR to use in wolf population management (Michigan Wolf Management Roundtable 2006, pp. 6-7):

- Strategic management goals should be based on positive and negative wolf impacts, rather than on wolf numbers, and should consider genetic diversity, population sustainability, ecological and social benefits, impacts on wildlife and their habitats, human safety, and limiting wolf depredation on domestic animals.
- Wolf-human conflicts are best resolved at the individual wolf or pack level, with broader scale wolf population management considered only when excessive wolf numbers are determined to be the cause of significant conflict.
- Wolf management should be ''adaptive management'' and should include evaluation of management practices.
- Michigan wolves will need to be killed on a case-by-case basis to resolve conflicts, and hunters can be used for such management in the future.
- Natural expansion of wolves to the NLP should be accompanied by education efforts to enhance public tolerance of that expansion.

The Roundtable provided a series of guiding principles that specifically deal with wolf-related conflicts in order to minimize such conflicts and provide relief when they occur, with the goal of ensuring long-term viability of the wolf population (Michigan Wolf Management Roundtable 2006, pp. 7–9).

- Lethal control is an accepted option, but more emphasis is needed on the development and use of non-lethal methods. The Roundtable does not recommend the use of lethal measures as a preventative approach where conflicts do not yet exist.
- Attacks on dogs trespassing into a pack territory are predictable and normal wolf behavior, and the primary responsibility for reducing the attacks lies with the dog owner. Lethal control of the pack should not be used unless non-lethal methods are ineffective and the attacks become chronic.
- Compensation for livestock losses should be tied to the use of best management practices to decrease wolf-livestock conflicts. An incremental approach by MI DNR to resolve wolf-livestock conflicts should involve technical support, non-lethal methods, and lethal control, and should be implemented in a manner that reflects the severity and frequency of the attacks.
- Livestock owners should be allowed, without a permit, to kill wolves in the act of attacking livestock on private property. Lethal take permits should be available to landowners if non-lethal methods are ineffective following verified wolf depredations. Abuses of these permits should be referred for prosecution.

While recognizing that public hunting or trapping of wolves is a valid management tool to reduce wolf-related conflicts under specific conditions, the Roundtable was unable to come to a consensus position on conducting a wolf hunting or trapping program in the absence of a need to reduce the wolf population to address identified conflicts. Developing guiding principles regarding such a public harvest of wolves was not possible due to the significantly different and deeply held fundamental values of various Roundtable members (Michigan Wolf Management Roundtable 2006, p. 10).

Guiding principles also were provided by the Roundtable to stress the importance of continuing and enhancing information, education, and research components of wolf management and to include information in the management plan regarding the cultural and spiritual significance of the wolf to Native Americans. The Roundtable provided additional guiding principles that support a prohibition on the private possession of wolves without a permit, express concern that wolf-dog hybrids will have negative effects on the State's wild wolf population, and encourage annual review by a State wolf advisory council and plan updates at 5-year intervals.

Because the Michigan plan revision process will not be completed until late in 2007, we cannot evaluate the goals, strategies, or activities that it will contain. However, MI DNR has long been an innovative leader, not a reluctant follower, in wolf recovery

efforts, exemplified by its initiation of the nation's first attempt to reintroduce wild wolves to vacant historical wolf habitat in 1974 (Weise *et al.* 1975). MI DNR's history of leadership in wolf recovery, its repeated written commitments to ensure the continued viability of a Michigan wolf population above a level that would trigger State or Federal listing as threatened or endangered, along with the protective ''Guiding Principles'' from the Michigan Wolf Management Roundtable, lead us to conclude that both the current Michigan Plan, and the revised plan to be developed using the guidance of the Roundtable, will provide adequate regulatory mechanisms for Michigan wolves. The DNR's goal remains to ''ensure the wolf population remains viable and above a level that would require either Federal or State reclassification as a threatened or endangered species'' (Moritz in litt. 2006) and upon Federal delisting to ''conduct management to ensure the persistence of a viable wolf population in Michigan, and thus preclude the need for its reclassification as threatened or endangered under State or Federal law'' (Koch in litt. 2006a).

Depredation Control in Michigan

Data from Michigan show a general increase in confirmed wolf depredations on livestock: 3 in 1998, 1 in 1999, 5 in 2000, 3 in 2001, 5 in 2002, 13 in 2003, 11 in 2004, and 5 in 2005. These livestock depredations occurred at 34 different UP farms; nearly three-quarters of the depredations were on cattle, with the rest on sheep, poultry and captive cervids (Beyer *et al.* 2006, p. 85).

Michigan has not experienced as high a level of attacks on dogs by wolves as Wisconsin, although a slight increase in such attacks has occurred over the last decade. The number of dogs killed in the State was one in 1996, two in 1999, three in 2001, four in 2002, eight in 2003, 4 in 2004, and 2 in 2005; seven additional dogs were injured in wolf attacks during that same period (Beyer *et al.* 2006, p. 93). Similar to Wisconsin, MI DNR has guidelines for its depredation control program, stating that lethal control will not be used when wolves kill dogs that are free-roaming, hunting, or training on public lands. Lethal control of wolves, however, would be considered if wolves have killed confined pets and remain in the area where more pets are being held (MI DNR 2005a, p. 6).

During the several years that lethal control of depredating wolves had been conducted in Michigan, there is no evidence of resulting adverse impacts to the maintenance of a viable wolf population in the UP. Four, six, two, and seven wolves, respectively, were euthanized in 2003, 2004, 2005, and 2006 (Beyer *et al.* 2006, p. 88; Roell in litt. 2006c, p. 1). This represents 1.2 percent, 1.7 percent, 0.5 percent, and 1.6 percent, respectively, of the UP's late winter population of wolves during the previous winter. Following this level of lethal depredation control, the UP wolf population increased 12 percent from 2003 to 2004, 13 percent from 2004 to 2005, and 7 percent from 2005 to 2006, demonstrating that the wolf population continues to increase at a healthy rate (Huntzinger *et al.* 2005, p. 6; MI DNR 2006a).

Post-Delisting Depredation Control in Michigan

Following Federal delisting, wolf depredation control in Michigan would be carried out according to the 1997 Michigan Wolf Recovery and Management Plan (MI DNR 1997), the revised Michigan management plan when completed, and any Tribal wolf management plans that may be developed in the future for reservations in occupied wolf range. Until such time as MI DNR adopts changes to wolf depredation control measures, the following management practices will be used following the effective date of Federal delisting.

To provide depredation control guidance when lethal control is an option, MI DNR has developed detailed instructions for incident investigation and response (MI DNR 2005a). Verification of wolf depredation incidents will be conducted by MI DNR or USDA–APHIS–Wildlife Services personnel (working under a cooperative agreement with MI DNR or at the request of a Tribe, depending on the location) who have been trained in depredation investigation techniques. The MI DNR specifies that the verification process will use the investigative techniques that have been developed and successfully used in Minnesota by Wildlife Services (MI DNR 2005a, Append. B, pp. 9–10). Following verification, one or more of several options will be implemented to address the depredation problem. Technical assistance, consisting of advice or recommendations to reduce wolf conflicts, will be provided. Technical assistance may also include providing to the landowner various forms of non-injurious behavior modification materials, such as flashing lights, noise makers, temporary fencing, and fladry.

Trapping and translocating depredating wolves has been used in the past, resulting in the translocation of 23 UP wolves during 1998–2003 (Beyer *et al.* 2006, p. 88), and it may be used in the future, but as with Wisconsin, suitable relocation sites are becoming rarer, and there is local opposition to the release of translocated depredators. Furthermore, none of the past translocated depredators have remained near their release sites, making this a questionable method to end the depredation behaviors of these wolves (MI DNR 2005a, pp. 3–4).

Lethal control of depredating wolves is likely to be the most common future response in situations when improved livestock husbandry and wolf behavior modification techniques (e.g., flashing lights, noise-making devices) are judged to be inadequate. As wolf numbers continue to increase on the UP, the number of verified depredations will also increase, and will probably do so at a rate that exceeds the rate of wolf population increase. This will occur as wolves increasingly disperse into and occupy areas of the UP with more livestock and more human residences, leading to additional exposure to domestic animals. In a recent application for a lethal take permit under section 10(a)(1)(A) of the Act, MI DNR requested authority to euthanize up to 10 percent of the late-winter wolf population annually (MI DNR 2005b, p. 1). However, based on 2003–2005 depredation data, it is likely that significantly less than 10 percent lethal control will be needed over the next several years.

The Michigan Wolf Management Roundtable has provided recommendations to guide management of various conflicts caused by wolf recovery, including depredation on livestock and pets, human safety, and public concerns regarding wolf impacts on other wildlife. We view the Roundtable's depredation and conflict control recommendations to be conservative, in that they recommend non-lethal depredation management whenever possible, oppose preventative wolf removal where problems have not yet occurred, encourage incentives for best management practices that decrease wolf-livestock practices without impacting wolves, and support closely monitored and enforced take by landowners of wolves ''in the act of livestock depredation'' or under limited permits if depredation is confirmed and non-lethal methods are determined to be ineffective. Based on these guiding principles for the revised MI Plan, the current MI Plan, and stated goals for maintaining wolf populations at or above recovery goals, the Service believes any wolf management changes will not be implemented in a manner

that results in significant reductions in Michigan wolf populations. At this time, MI DNR remains committed to ensuring a viable wolf population above a level that would trigger Federal relisting as either threatened or endangered in the future (Koch in litt. 2006a), and we do not see any indication from their Plan revision efforts that the DNR is departing from that commitment.

Similar to Wisconsin, Michigan livestock owners are compensated when they lose livestock as a result of a confirmed wolf depredation. Currently there are two complementary compensation programs in Michigan, one funded by the MI DNR and implemented by Michigan Department of Agriculture (MI DA) and another set up through donations (from Defenders of Wildlife and private citizens) and administered by the International Wolf Center (IWC), a non-profit organization. From the inception of the program to 2000, MI DA has paid 90 percent of full market value of depredated livestock value at the time of loss. The IWC account was used to pay the remaining 10 percent from 2000 to 2002 when MI DA began paying 100 percent of the full market value of depredated livestock. The IWC account continues to be used to pay the difference between value at time of loss and the full fall market value for depredated young of the year livestock, and together the two funds have provided nearly $20,000 in livestock loss compensation through 2005 (Beyer *et al.* 2006, p. 86). Neither of these programs provide compensation for pets or for veterinary costs to treat wolf-inflicted livestock injuries. The MI DNR plans to continue cooperating with MI DA and other organizations to maintain the wolf depredation compensation program (Pat Lederle pers. comm. 2004).

The complete text of the Wisconsin, Michigan, and Minnesota wolf plans, as well as our summaries of those plans, can be found on our Web site (see **FOR FURTHER INFORMATION CONTACT** section above).

Regulatory Mechanisms in Other States and Tribal Areas Within the WGL DPS

North Dakota and South Dakota

North Dakota lacks a State endangered species law or regulations. Any gray wolves in the State currently are classified as furbearers, with a closed season. North Dakota Game and Fish Department is unlikely to change the species' State classification immediately following Federal delisting. Wolves are included in the State's July 2004 list of 100 Species of Conservation Concern as a ''Level 3'' species. Level 3 species are those ''having a moderate level of conservation priority, but are believed to be peripheral or do not breed in North Dakota.'' Placement on this list gives species greater access to conservation funding, but does not afford any additional regulatory or legislative protection (Bicknell in litt. 2005).

Currently any wolves that may be in South Dakota are not State listed as threatened or endangered, nor is there a hunting or trapping season for them. Upon the effective date of Federal delisting gray wolves in eastern South Dakota will fall under general protections afforded all State wildlife. These protections require specific provisions—seasons and regulations—be established prior to initiating any form of legal take. Thus, the State could choose to implement a hunting, or trapping season for gray wolves east of the Missouri River; however, absent some definitive action to establish a season, wolves would remain protected. Following Federal delisting, any verified depredating wolves east of the Missouri will likely be trapped and killed by the USDA–APHIS–Wildlife Services program (Larson in litt. 2005). Non-depredating federally-delisted wolves in North and South Dakota will continue to receive protection by the States' wildlife protection statutes unless specific action is taken to open a hunting or trapping season or otherwise remove existing protections.

Post-Delisting Depredation Control in North and South Dakota

Since 1993, five incidents of verified wolf depredation have occurred in North Dakota, with one in September 2003 and two more in December 2005. There have been no verified wolf depredations in South Dakota in recent decades. Following Federal delisting we assume that lethal control of a small number of depredating wolves will occur in one or both of these States. Lethal control of depredating wolves may have adverse impacts on the ability of wolves to occupy any small areas of suitable or marginally suitable habitat that may exist in the States. However, lethal control of depredating wolves in these two States will have no adverse affects on the long-term viability of wolf populations in the WGL DPS as a whole, because the existence of a wolf or a wolf population in the Dakotas will not make a meaningful contribution to the maintenance of the current viable, self-sustaining, and representative metapopulation of wolves in the WGL DPS.

Other States in the Western Great Lakes DPS

This delisted DPS includes the portion of Iowa that is north of Interstate Highway 80, which is approximately 60 percent of the State. The Iowa Natural Resource Commission currently lists gray wolves as furbearers, with a closed season (Howell in litt. 2005). If the State retains this listing following Federal delisting of this DPS, wolves dispersing into northern Iowa will be protected by State law.

The portion of Illinois that is north of Interstate Highway 80, less than one-fifth of the State, is included in this DPS, and is part of the geographic area where wolves are now delisted and removed from Federal protection. Gray wolves are currently protected in Illinois as a threatened species under the Illinois Endangered Species Protection Act (520 ILCS 10). Thus, following this Federal delisting, wolves dispersing into northern Illinois will continue to be protected from human take by State law.

The extreme northern portions of Indiana and northwestern Ohio are included within this delisted DPS, and any wolves that are found in this area are no longer federally protected under the Act. The State of Ohio classifies the gray wolf as ''extirpated,'' and there are no plans to reintroduce or recover the species in the State. The species lacks State protection, but State action is likely to apply some form of protection if wolves begin to disperse into the State (Caldwell in litt. 2005). Indiana DNR lists the gray wolf as extirpated in the State, and the species would receive no State protection under this classification following this Federal delisting. The only means to provide State protection would be to list them as State-endangered, but that is not likely to occur unless wolves become resident in Indiana (Johnson in litt. 2005, in litt. 2006). Thus, federally delisted wolves that might disperse into Indiana and Ohio would lack State protection there, unless these two States take specific action to provide new protections.

Because the portions of Iowa, Illinois, Indiana, and Ohio within the WGL DPS do not contain suitable habitat or currently established packs, depredation control in these States will not have any significant impact on the continued viability of the WGL DPS wolf populations.

Tribal Management and Protection of Gray Wolves

Native American tribes and multi-tribal organizations have indicated to the Service that they will continue to

conserve wolves on most, and probably all, Native American reservations in the core recovery areas of the WGL DPS. The wolf retains great cultural significance and traditional value to many Tribes and their members (additional discussion is found in Factor E), and to retain and strengthen cultural connections, many tribes oppose unnecessary killing of wolves on reservations and on ceded lands, even following Federal delisting (Hunt in litt. 1998; Schrage in litt. 1998a; Schlender in litt. 1998). Some Native Americans view wolves as competitors for deer and moose, whereas others are interested in harvesting wolves as furbearers (Schrage in litt. 1998a). Many tribes intend to sustainably manage their natural resources, wolves among them, to ensure that they are available to their descendants. Traditional natural resource harvest practices, however, often include only a minimum amount of regulation by the Tribal government (Hunt in litt. 1998).

Although the Tribes with wolves that visit or reside on their reservations do not yet have management plans specific to the gray wolf, several Tribes have informed us that they have no plans or intentions to allow commercial or recreational hunting or trapping of the species on their lands after Federal delisting. The Service has recently provided the Little Traverse Bay Band of Odawa Indians (Michigan) with grant funding to develop a gray wolf monitoring and management plan. The Service has also awarded a grant to the Ho-Chunk Nation to identify wolf habitat on reservation lands.

As a result of many past contacts with, and previous written comments from, the Midwestern Tribes and their off-reservation natural resource management agencies—the Great Lakes Indian Fish and Wildlife Commission (GLIFWC), the 1854 Authority, and the Chippewa Ottawa Treaty Authority—it is clear that their predominant sentiment is strong support for the continued protection of wolves at a level that ensures that viable wolf populations remain on reservations and throughout the treaty-ceded lands surrounding the reservations. While several Tribes stated that their members may be interested in killing small numbers of wolves for spiritual or other purposes, this would be carried out in a manner that would not impact reservation or ceded territory wolf populations.

The Tribal Council of the Leech Lake Band of Minnesota Ojibwe (Council) approved a resolution that describes the sport and recreational harvest of gray wolves as an inappropriate use of the animal. That resolution supports limited harvest of wolves to be used for traditional or spiritual uses by enrolled Tribal members if the harvest is done in a respectful manner and would not negatively affect the wolf population. The Council is revising the Reservation Conservation Code to allow Tribal members to harvest some wolves after Federal delisting (Googgleye, Jr. in litt. 2004). In 2005, the Leech Lake Reservation was home to an estimated 75 gray wolves, the largest population of wolves on a Native American reservation in the 48 conterminous States (Mortensen pers. comm. 2006; White in litt. 2003).

The Red Lake Band of Chippewa Indians (Minnesota) has indicated that it is likely to develop a wolf management plan that will be very similar in scope and content to the plan developed by the MN DNR. The Band's position on wolf management is ''wolf preservation through effective management,'' and the Band is confident that wolves will continue to thrive on their lands (Bedeau in litt. 1998). The Reservation currently has nine packs with an estimated 15–30 wolves within its boundaries (Huseby pers. comm. 2006).

The Fond du Lac Band (Minnesota) believes that the ''well being of the wolf is intimately connected to the well being of the Chippewa People'' (Schrage in litt. 2003). In 1998, the Band passed a resolution opposing Federal delisting and any other measure that would permit trapping, hunting, or poisoning of the gray wolf (Schrage in litt. 1998b, in litt. 2003). If this prohibition is rescinded, the Band's Resource Management Division will coordinate with State and Federal agencies to ensure that any wolf hunting or trapping would be ''conducted in a biologically sustainable manner'' (Schrage in litt. 2003).

The Red Cliff Band (Wisconsin) has strongly opposed State and Federal delisting of the gray wolf. Current Tribal law protects gray wolves from harvest, although harvest for ceremonial purposes would likely be permitted after Federal delisting (Symbal in litt. 2003).

The Keweenaw Bay Indian Community (Michigan) will continue to list the gray wolf as a protected animal under the Tribal Code following Federal delisting, with hunting and trapping prohibited (Mike Donofrio pers. comm. 1998). Furthermore, the Keweenaw Bay Community plans to develop a Protected Animal Ordinance that will address gray wolves (Donofrio in litt. 2003).

While we have not received any written comments from the Menominee Indian Tribe of Wisconsin, the Tribe has shown a great deal of interest in wolf recovery and protection in recent years. In 2002, the Tribe offered their Reservation lands as a site for translocating seven depredating wolves that had been trapped by WI DNR and Wildlife Services. Tribal natural resources staff participated in the soft release of the wolves on the Reservation and helped with the subsequent radio-tracking of the wolves. Although by early 2005 the last of these wolves died on the reservation, the tribal conservation department continued to monitor another pair that had moved onto the Reservation, as well as other wolves near the reservation (Wydeven in litt. 2006a). When that pair produced pups in 2006, but the adult female was killed, Reservation biologists and staff worked diligently with the WI DNR and the Wildlife Science Center (Forest Lake, Minnesota) to raise the pups in captivity in the hope that they could later be released to the care of the adult male. However, the adult male died prior to pup release, and they have been moved back to the Wildlife Science Center where they will likely remain in captivity (Pioneer Press 2006).

Several Midwestern tribes (e.g., the Bad River Band of Lake Superior Chippewa Indians and the Little Traverse Bay Bands of Odawa Indians) have expressed concern that Federal delisting will result in increased mortality of gray wolves on reservation lands, in the areas immediately surrounding the reservations, and in lands ceded by treaty to the Federal Government by the Tribes (Kiogama and Chingwa in litt. 2000). At the request of the Bad River Tribe of Lake Superior Chippewa Indians, we are currently working with their Natural Resource Department and WI DNR to develop a wolf management agreement for lands adjacent to the Bad River Reservation. The Tribe's goal is to reduce the threats to reservation wolf packs when they are temporarily off the reservation. Other Tribes have expressed interest in such an agreement. If this and similar agreements are implemented, they will provide additional protection to certain wolf packs in the midwestern U.S.

The GLIFWC has stated its intent to work closely with the States to cooperatively manage wolves in the ceded territories in the core areas, and will not develop a separate wolf management plan (Schlender in litt. 1998). Furthermore, the Voigt Intertribal Task Force of GLIFWC has expressed its support for strong protections for the wolf, stating '' [delisting] hinges on whether wolves are sufficiently restored and will be sufficiently protected to

ensure a healthy and abundant future for our brother and ourselves'' (Schlender in litt. 2004).

According to the 1854 Authority, ''attitudes toward wolf management in the 1854 Ceded Territory run the gamut from a desire to see total protection to unlimited harvest opportunity.'' However, the 1854 Authority would not ''implement a harvest system that would have any long-term negative impacts to wolf populations'' (Edwards in litt. 2003). In comments submitted for our 2004 delisting proposal for a larger Eastern DPS of the gray wolf, the 1854 Authority stated that the Authority does not have a wolf management plan for the 1854 Ceded Territory, but is ''confident that under the control of state and tribal management, wolves will continue to exist at a self-sustaining level in the 1854 Ceded Territory. Sustainable populations of wolves, their prey and other resources within the 1854 Ceded Territory are goals to which the 1854 Authority remains committed. As such, we intend to work with the State of Minnesota and other tribes to ensure successful state and tribal management of healthy wolf populations in the 1854 Ceded Territory'' (Myers in litt. 2004).

While there are few written Tribal protections currently in place for gray wolves, the highly protective and reverential attitudes that have been expressed by Tribal authorities and members have assured us that any post-delisting harvest of reservation wolves would be very limited and would not adversely impact the delisted wolf populations. Furthermore, any off-reservation harvest of wolves by Tribal members in the ceded territories would be limited to a portion of the harvestable surplus at some future time. Such a harvestable surplus would be determined and monitored jointly by State and Tribal biologists, and would be conducted in coordination with the Service and the Bureau of Indian Affairs, as is being successfully done for the ceded territory harvest of inland and Great Lakes fish, deer, bear, moose, and furbearers in Minnesota, Wisconsin, and Michigan. Therefore, we conclude that any future Native American take of delisted wolves will not significantly impact the viability of the wolf population, either locally or across the WGL DPS.

Federal Lands

The five national forests with resident wolves (Superior, Chippewa, Chequamegon-Nicolet, Hiawatha, and Ottawa National Forests) in Minnesota, Wisconsin, and Michigan are all operating in conformance with standards and guidelines in their management plans that follow the 1992 Recovery Plan's recommendations for the Eastern Timber Wolf (USDA FS 2004a, chapter 2, p. 31; USDA FS 2004b, chapter 2, p. 28; USDA FS 2004c, chapter 2, p. 19; USDA FS 2006a, chapter 2, p. 17; USDA FS 2006b, chapter 2, pp. 28–29). Delisting is not expected to lead to an immediate change in these standards and guidelines; in fact, the Regional Forester for U.S. Forest Service Region 9 is expected to maintain the classification of the gray wolf as a Regional Forester Sensitive Species for at least 5 years after Federal delisting (Moore in litt. 2003). Under these standards and guidelines, a relatively high prey base will be maintained, and road densities will be limited to current levels or decreased. For example, on the Chequamegon-Nicolet National Forest in Wisconsin, the standards and guidelines specifically include the protection of den sites and key rendezvous sites, and management of road densities in existing and potential wolf habitat (USDA 2004c, Chap. 2, p. 19). The trapping of depredating wolves would likely be allowed on national forest lands under the guidelines and conditions specified in the respective State wolf management plans. However, there are relatively few livestock raised within the boundaries of national forests in the upper midwest, so wolf depredation and lethal control of wolves is neither likely to be a frequent occurrence, nor constitute a significant mortality factor, for the WGL DPS. Similarly, in keeping with the practice for other state-managed game species, any public hunting or trapping season for wolves that might be opened in the future by the States would likely include hunting and trapping within the national forests (Lindquist in litt. 2005; Williamson in litt. 2005; Piehler in litt. 2005; Evans in litt. 2005). The continuation of current national forest management practices will be important in ensuring the long-term viability of gray wolf populations in Minnesota, Wisconsin, and Michigan.

Gray wolves regularly use four units of the National Park System in the WGL DPS and may occasionally use three or four other units. Although the National Park Service (NPS) has participated in the development of some of the State wolf management plans in this area, NPS is not bound by States' plans. Instead, the NPS Organic Act and the NPS Management Policy on Wildlife generally require the agency to conserve natural and cultural resources and the wildlife present within the parks. National Park Service management policies require that native species be protected against harvest, removal, destruction, harassment, or harm through human action, although certain parks may allow some harvest in accordance with state management plans. Management emphasis in National Parks after delisting will continue to minimize the human impacts on wolf populations. Thus, because of their responsibility to preserve all native wildlife, units of the National Park System are often the most protective of wildlife. In the case of the gray wolf, the NPS Organic Act and NPS policies will continue to provide protection following Federal delisting.

Management and protection of wolves in Voyageurs National Park, along Minnesota's northern border is not likely to change after delisting. The park's management policies require that ''native animals will be protected against harvest, removal, destruction, harassment, or harm through human action.'' No population targets for wolves will be established for the NP (Holbeck in litt. 2005). To reduce human disturbance, temporary closures around wolf denning and rendezvous sites will be enacted whenever they are discovered in the park. Sport hunting is already prohibited on park lands, regardless of what may be allowed beyond park boundaries (West in litt. 2004). A radio telemetry study conducted between 1987–91 of wolves living in and adjacent to the park found that all mortality inside the park was due to natural causes (e.g., killing by other wolves or starvation), whereas the majority (60–80 percent) of mortality outside the park was human-induced (e.g., shooting and trapping) (Gogan *et al.* 2004, p. 22). If there is a need to control depredating wolves outside the park, which seems unlikely due to the current absence of agricultural activities adjacent to the park, the park would work with the State to conduct control activities where necessary (West in litt. 2004).

The wolf population in Isle Royale National Park is described above (*see* Michigan Recovery). The NPS has indicated that it will continue to closely monitor and study these wolves. This wolf population is very small and isolated from the other WGL DPS gray wolf populations; as described above, it is not considered to be significant to the recovery or long-term viability of the gray wolf (USFWS 1992, p. 28).

Two other units of the National Park System, Pictured Rocks National Lakeshore and St. Croix National Scenic Riverway, are regularly used by wolves. Pictured Rocks National Lakeshore is a

narrow strip of land along Michigan's Lake Superior shoreline. Lone wolves periodically use, but do not appear to be year-round residents of, the Lakeshore. If denning occurs after delisting, the Lakeshore would protect denning and rendezvous sites at least as strictly as the Michigan Plan recommends (Gustin in litt. 2003). Harvesting wolves on the Lakeshore may be allowed (i.e., if the Michigan DNR allows for harvest in the State), but trapping is not allowed. The St. Croix National Scenic Riverway, in Wisconsin and Minnesota, is also a mostly linear ownership. At least 18 wolves from 6 packs use the Riverway. The Riverway is likely to limit public access to denning and rendezvous sites and to follow other management and protective practices outlined in the respective State wolf management plans, although trapping is not allowed on NPS lands except possibly by Native Americans (Maercklein in litt. 2003).

Gray wolves occurring on NWRs in the WGL DPS will be monitored, and refuge habitat management will maintain the current prey base for them for a minimum of 5 years after delisting. Trapping or hunting by government trappers for depredation control will not be authorized on NWRs. Because of the relatively small size of these NWRs, however, most or all of these packs and individual wolves also spend significant amounts of time off of these NWRs.

Gray wolves also occupy the Fort McCoy military installation in Wisconsin. In 2003, one pack containing five adult wolves occupied a territory that included the majority of the installation; in 2004 and 2006, the installation had one pack with two adults; in 2005 there was a single pack with 4 wolves. Management and protection of wolves on the installation will not change significantly after Federal and/or State delisting. Den and rendezvous sites would continue to be protected, hunting seasons for other species (i.e. coyote) would be closed during the gun-deer season, and current surveys would continue, if resources are available. Fort McCoy has no plans to allow a public harvest of wolves on the installation (Nobles in litt. 2004; Wydeven *et al.* 2005a, p. 25; 2006a, p. 25).

At least one pair of wolves produced pups on Camp Ripley Army National Guard Training Facility in Minnesota since 1994. This military base currently hosts two packs that have the majority of their territories within the base boundaries. The population of the two packs generally ranges between 10 and 20 animals. Currently three wolves in each pack are being radio-tracked. There have been no significant conflicts with military training or with the permit-only public deer hunting program there, and no new conflicts are expected following delisting (Brian Dirks pers. comm. 2006).

The protection afforded to resident and transient wolves, their den and rendezvous sites, and their prey by five national forests, four National Parks, two military facilities, and numerous National Wildlife Refuges in Minnesota, Wisconsin, and Michigan would further ensure the conservation of wolves in the three States after delisting. In addition, wolves that disperse to other units of the National Refuge System or the National Park System within the WGL DPS will also receive the protection afforded by these Federal agencies.

In summary, following this Federal delisting of the WGL DPS of gray wolves, there will be varying State and Tribal classifications and protections provided to wolves. The wolf management plans currently in place for Minnesota, Wisconsin, and Michigan will be more than sufficient to retain viable wolf populations in each State that are above the Federal recovery criteria for wolf metapopulation subunits, and even for three completely isolated wolf populations. These State plans provide a very high level of assurance that wolf populations in these three States will not decline to nonviable levels in the foreseeable future. Furthermore, the 2006 Update to the Wisconsin Wolf Management Plan (WI DNR 2006a, pp. 3–4) demonstrates the State's commitment by retaining the previous management goal of 350 wolves, and it did not weaken any significant component of the original 1999 Plan. Similarly, current work on revising the Michigan wolf plan is being conducted in a manner that will maintain the State's commitments to maintain viable wolf populations after this Federal delisting. While these State plans recognize there may be a need to control or even reduce wolf populations at some future time, none of the plans include a public harvest of wolves.

Federally delisted wolves in Minnesota, Wisconsin, and Michigan will continue to receive protection from general human persecution by State laws and regulations. Michigan has met the criteria established in their management plan for State delisting and, subsequent to Federal delisting, intends to amend the Wildlife Conservation Order to grant ''protected animal'' status to the gray wolf. That status would ''prohibit take, establish penalties and restitution for violations of the Order, and detail conditions under which lethal depredation control measures could be implemented'' (Humphries in litt. 2004). Following Federal delisting, Wisconsin will fully implement a ''protected wild animal'' for the species, including protections that provide for fines of $1,000 to $2,000 for unlawful hunting. Minnesota DNR will consider population management measures, including public hunting and trapping, but this will not occur sooner than 5 years after Federal delisting and will maintain a wolf population of at least 1600 animals (MN DNR 2001, p. 2). In the meantime, wolves in Zone A could only be legally taken in Minnesota for depredation management or public safety, and Minnesota plans to increase its capability to enforce laws against take of wolves (MN DNR 2001, pp. 3–4).

Except for the very small portions of Indiana and Ohio, WGL DPS wolves are likely to remain protected by various state designations for the immediate future. States within the boundaries of the DPS either currently have mechanisms in place to kill depredating wolves (North Dakota and South Dakota) or can be expected to develop mechanisms following this Federal delisting of the DPS, in order to deal with wolf-livestock conflicts in areas where wolf protection is no longer required by the Act. Because these States constitute only about one-third of the land area within the DPS, and contain virtually no suitable habitat of sufficient size to host viable gray wolf populations, it is clear that even complete protection for gray wolves in these areas would neither provide significant benefits to wolf recovery in the DPS, nor to the long-term viability of the recovered populations that currently reside in the DPS. Therefore, although current and potential future regulatory mechanisms may allow the killing of gray wolves in these six States, these threats, and the area in which they will be manifest, will not impact the recovered wolf populations in the DPS now or in the foreseeable future.

Finally, although to our knowledge no Tribes have completed wolf management plans at this time, based on communications with Tribes and Tribal organizations, federally delisted wolves are very likely to be adequately protected on Tribal lands. Furthermore, the numerical recovery criteria in the Federal Recovery Plan would be achieved and maintained (based on the population and range of off-reservation wolves) even without Tribal protection of wolves on reservation lands. In addition, on the basis of information received from other Federal land management agencies in Minnesota, Wisconsin, and Michigan, we expect National Forests, units of the National

Park System, military bases, and National Wildlife Refuges will provide protections to gray wolves after delisting that will match, and in some will cases exceed, the protections provided by State wolf management plans and State protective regulations.

Therefore, we conclude that the regulatory mechanisms that will be in place subsequent to Federal delisting will preclude threats sufficient to cause the WGL DPS gray wolves to be in danger of extinction in the foreseeable future in all or a significant portion of the range within the WGL DPS.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Taking of Wolves by Native Americans for Religious, Spiritual, or Traditional Cultural Purposes

As noted elsewhere in this final rule, the wolf has great significance to many Native Americans in the Western Great Lakes area, especially to Wolf Clan members, and has a central role in their creation stories. The wolf, Ma''ingan, is viewed as a brother to the Anishinaabe people, and their fates are believed to be closely linked. Ma''ingan is a key element in many of their beliefs, traditions, and ceremonies, and wolf pack systems are used as a model for Anishinaabe families and communities. We are not aware of any takings of wolves in the Midwest for use in these traditions or ceremonies while the wolf has been listed as a threatened or endangered species. While wolves have been listed as threatened in Minnesota, we have instructed Wildlife Services to provide, upon request, gray wolf pelts and other parts from wolves killed during depredation control actions to Tribes in order to partially serve these traditional needs.

Some Tribal representatives, as well as the GLIFWC, have indicated that following delisting there is likely to be interest in the taking of small numbers of wolves for traditional ceremonies (King in litt. 2003; White in litt. 2003). This take could occur on reservation lands where it could be closely regulated by a Tribe to ensure that it does not affect the viability of the reservation wolf population. Such takings might also occur on off-reservation treaty lands on which certain Tribes retained hunting, fishing, and gathering rights when the land was ceded to the Federal Government in the 19th Century. Native American taking of wolves from ceded lands would be limited to a specified portion of a harvestable surplus of wolves that is established by the States in coordination with the Tribes, consistent with past Federal court rulings on treaty rights. Such taking will not occur until such time as a harvestable surplus has been documented based on biological data, and regulations and monitoring have been established by the States and Tribes to ensure a harvest can be carried out in a manner that ensures the continued viability of the wolf population in that State. Previous court rulings have ensured that Native American treaty harvest of fish or wildlife species have not risked endangering the resource.

If requested by the Tribes, multitribal natural resource agencies, and/or the States, the Service or other appropriate Federal agencies will work with these parties to help determine if a harvestable surplus exists, and if so, to assist in devising reasonable and appropriate methods and levels of harvest for delisted wolves for traditional cultural purposes.

We conclude that small number of wolves that may be taken by Native Americans will not be a threat sufficient to cause the WGL DPS gray wolves to be in danger of extinction in the foreseeable future in all or a significant portion of the range within the WGL DPS.

Public Attitudes Toward the Gray Wolf

An important determinant of the long-term status of gray wolf populations in the United States will be human attitudes toward this large predator. These attitudes are based on the conflicts between human activities and wolves, concern with the danger the species may pose to humans, its symbolic representation of wilderness, the economic effect of livestock losses, the emotions regarding the threat to pets, the perceived competition with hunters for deer and moose, the conviction that the species should never be a target of sport hunting or trapping, wolf traditions of Native American tribes, and other factors.

We have seen indications of a change in public attitudes toward the wolf over the last few decades. Public attitude surveys in Minnesota and Michigan (Kellert 1985, pp. 157–163; 1990, pp. 100–102; 1999, pp. 400–403), as well as the citizen input into the wolf management plans of Minnesota, Wisconsin, and Michigan, have indicated strong public support for wolf recovery if the adverse impacts on recreational activities and livestock producers can be minimized (MI DNR 1997, pp. 13–14, 50–56; MN DNR 1998, p. 2; WI DNR 1999, pp. 51–55; WI DNR 2006c, pp. 9–11). However, more recent surveys of Michigan residents may show that attitudes are changing now that the wolf recovery has succeeded and long-term wolf management is required. Although the majority of Michigan residents still support wolf recovery efforts, UP residents' support for wolf recovery has declined substantially since the 1990 Kellert survey (Mertig 2004, p. 37). At the same time, respondents from across the State have increased their support for killing individual problem wolves; support for lethal control of problem wolves ranges from 70 percent in the Southern Lower Peninsula to 85 percent in the UP (Mertig 2004, p. 40). In Wisconsin, a number of recent surveys, when taken together, provide strong evidence of support for a Wisconsin wolf population of 250–350 wolves or more (Naughton-Treves *et al.* 2003; Schanning and Vazquez 2005; Naughton *et al.* 2005 unpublished report; WI DNR 2006a, p. 9).

Once this delisting is in effect, States and tribes will have increased flexibility to deal with wolf human conflicts, including the use of lethal control of problems wolves, as specified in their current wolf management plans. It is unclear whether such flexibility of wolf control will affect public attitudes towards wolves (i.e., diminish opposition to the local presence of wolves), due to the strong influence of other factors.

The Minnesota DNR recognizes that to maintain public support for wolf conservation it must work to ensure that people are well informed about wolves and wolf management in the State. Therefore, MN DNR plans to provide ''timely and accurate information about wolves to the public, to support and facilitate wolf education programs, and to encourage wolf ecotourism,'' among other activities (MN DNR 2001, p. 29–30). Similarly, the Wisconsin and Michigan wolf management plans emphasize the need for long-term cooperative efforts with private educational and environmental groups to develop and distribute educational and informational materials and programs for public use (MI DNR 1997, p. 20; WI DNR 1999, pp. 26–27). We fully expect organizations such as the International Wolf Center (Ely, MN), the Timber Wolf Alliance (Ashland, WI), Timber Wolf Information Network (Waupaca, WI), the Wildlife Science Center (Forest Lake, MN), and other organizations to continue to provide educational materials and experiences with wolves far into the future, regardless of the Federal status of wolves.

In summary, we conclude that there is evidence showing strong public support for current wolf population levels in the

WGL DPS, especially if problem wolves, and to a lesser extent wolf numbers, are controlled. This support is a key component in our assessment of threats to the WGL DPS. Notwithstanding a small but significant societal segment who is opposed to the current level of wolf recovery and which may resort to illegal actions if problem wolves and the overall wolf population is not adequately managed, we believe that delisting while public support for wolves is still strong, followed by more intensive management of wolf populations by the States, is the best way to reduce the level of threat caused by human-induced mortality. We conclude that public attitudes towards wolves now and in the foreseeable future will not be threats sufficient to cause the WGL DPS gray wolves to be in danger of extinction in the foreseeable future in all or a significant portion of the range within the WGL DPS.

Summary of Our Five-Factor Analysis of Potential Threats

As required by the Act, we considered the five potential threat factors to assess whether wolves are threatened or endangered throughout all or a significant portion of their range in the WGL DPS and, therefore, whether the WGL DPS should be listed as threatened or endangered. While wolves historically occurred over most of the DPS, large portions of this area are no longer significant, and the wolf population in the WGL DPS will remain centered in Minnesota, Michigan, and Wisconsin.

While we recognize that gray wolves in the WGL DPS do not occupy all portions of their historical range, including some disjunct but potentially suitable areas with low road and human density and a healthy prey base within the WGL DPS, wolves in this DPS no longer meet the definition of a threatened or endangered species. Although there may be historical habitat within the DPS that remains unoccupied, many of these areas are no longer suitable. None of these historical areas are significant portions of the range of the WGL DPS.

We have based our determinations on the current status of, and future threats likely to be faced by, existing wolf populations within the WGL DPS in the foreseeable future.

The number of wolves in the WGL DPS greatly exceeds the recovery criteria (USFWS 1992, p. 24–26) for (1) a secure wolf population in Minnesota, and (2) a second population of 100 wolves for 5 successive years. Based on the criteria set by the Eastern Wolf Recovery Team in 1992 and reaffirmed in 1997 and 1998 (Peterson in litt. 1997, in litt. 1998), and endorsed by the peer reviewers, the DPS contains sufficient wolf numbers and distribution to ensure their long-term survival within the DPS. The maintenance and expansion of the Minnesota wolf population has maximized the preservation of the genetic diversity that remained in the WGL DPS when its wolves were first protected in 1974. Furthermore, the Wisconsin-Michigan wolf population has even exceeded the numerical recovery criterion for a completely isolated population. Therefore, even if this two-State population was to become totally isolated and wolf immigration from Minnesota and Ontario completely ceased, it would still remain a viable wolf population for the foreseeable future, as defined by the Recovery Plan (USFWS 1992, p. 25–26). Finally, the wolf populations in Wisconsin and Michigan each have separately exceeded 200 animals for 8 and 7 years respectively, so if they each somehow were to become isolated, they are already above viable population levels, and each State has committed to manage its wolf population at or above viable population levels. The wolf's numeric and distributional recovery criteria in the WGL DPS clearly have been exceeded in both magnitude and duration. The wolf's recovery in numbers and distribution in the WGL DPS, together with the status of the remaining threats, indicates that the WGL DPS of the gray wolf is not in danger of extinction, nor likely to become an endangered species, within the foreseeable future throughout all or a significant portion of its range.

Post-delisting wolf protection, management, and population and health monitoring by the States, Tribes, and Federal land management agencies—especially in Minnesota Zone A, Wisconsin Zones 1 and 2, and across the UP of Michigan, which constitute the significant portion of the species' range—will ensure the continuation of viable wolf populations above the Federal recovery criteria for the foreseeable future. Post-delisting threats to wolves in Zone B in Minnesota, Zones 3 and 4 in Wisconsin, and in the Lower Peninsula of Michigan—all areas that are not significant portions of the range of the WGL DPS—will be more substantial, and may preclude the establishment of wolf packs in most or all of these areas in Wisconsin and Michigan. Similarly, the lack of sufficient areas of suitable habitat in those parts of North Dakota, South Dakota, Iowa, Illinois, Indiana, and Ohio that are within the WGL DPS are expected to preclude the establishment of viable populations in these areas, although dispersing wolves and packs may temporarily occur in some of these areas. However, these areas are not SPR and wolf numbers in these areas will have no impact on the continued viability of the recovered WGL DPS. Reasonably foreseeable threats to wolves in all parts of the WGL DPS are not likely to threaten wolf population viability in the WGL DPS in the foreseeable future.

In summary, we find that the threat of habitat destruction or degradation or a reduction in the range of the gray wolf; utilization by humans; disease, parasites, or predatory actions by other animals or humans; regulatory measures by State, Tribal, and Federal agencies; or other threats will not individually or in combination be likely to cause the WGL DPS of the gray wolf to be in danger of extinction in the foreseeable future in all or a significant portion of the species' range. Ongoing effects of recovery efforts over the past decade, which resulted in a significant expansion of the occupied range of wolves in the WGL DPS, in conjunction with future State, Tribal, and Federal agency wolf management across that occupied range, will be adequate to ensure the conservation of the SPR of the WGL DPS. These activities will maintain an adequate prey base, preserve denning and rendezvous sites and dispersal corridors, monitor disease, restrict human take, and keep wolf populations well above the numerical recovery criteria established in the Federal Recovery Plan for the Eastern Timber Wolf (USFWS 1992, pp. 25–28).

After a thorough review of all available information and an evaluation of the previous five factors specified in section 4(a)(1) of the Act, as well as consideration of the definitions of ''threatened'' and ''endangered'' contained in the Act and the reasons for delisting as specified in 50 CFR 424.11(d), we conclude that removing the WGL DPS from the List of Endangered and Threatened Wildlife (50 CFR 17.11) is appropriate. Gray wolves have recovered in the WGL DPS as a result of the reduction of threats as described in the analysis of the five categories of threats.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices.

Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. The final rule removes these Federal conservation measures for all gray wolves within the WGL DPS.

Effects of the Rule

This rule removes the protections of the Act for the WGL DPS by removing the wolves in that DPS from the List of Endangered and Threatened Wildlife. Elsewhere in today's **Federal Register**, we also identify the Northern Rocky Mountain (NRM) DPS and remove the gray wolves in that DPS from the List of Endangered and Threatened Wildlife, except for the gray wolves in Wyoming, a significant portion of the NRM DPS range, which will continue to be listed as an experimental population. As the Service is taking these regulatory actions with respect to the WGL DPS and the NRM 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, a significant portion 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 WGL DPS is attributable to this final rule.

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

This final rule removes the special regulations under section 4(d) of the Act for wolves in Minnesota. These regulations currently are found at 50 CFR 17.40(d).

Critical habitat was designated for the gray wolf in 1978 (43 FR 9607, March 9, 1978). That rule (codified at 50 CFR 17.95(a)) identifies Isle Royale National Park, Michigan, and Minnesota wolf management zones 1, 2, and 3, as delineated in 50 CFR 17.40(d)(1), as critical habitat. Wolf management zones 1, 2, and 3 comprise approximately 25,500 sq km (9,845 sq mi) in northeastern and north-central Minnesota. This final rule removes the designation of critical habitat for gray wolves in Minnesota and on Isle Royale, Michigan.

This notice does not apply to the listing or protection of the red wolf (*C. rufus*). Furthermore, the remaining protections of the gray wolf under the Act do not extend to gray wolf-dog hybrids.

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 (PDM) is to verify that a species delisted due to recovery remains secure from risk of extinction after it no longer has the protections of the Act. To do this, PDM generally focuses on evaluating (1) demographic characteristics of the species, (2) threats to the species, and (3) implementation of legal and/or management commitments that have been identified as important in reducing threats to the species or maintaining threats at sufficiently low levels. We are to make prompt 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. Section 4(g) of the Act explicitly requires cooperation with the States in development and implementation of PDM programs, but we remain responsible for compliance with section 4(g) and, therefore, must remain actively engaged in all phases of PDM. We also will seek active participation of other entities that are expected to assume responsibilities for the species' conservation, after delisting.

We are developing a PDM plan for the gray wolves in the WGL DPS with the assistance of the Eastern Gray Wolf Recovery Team. Once completed, we will make that document available on our Web site (See **FOR FURTHER INFORMATION CONTACT** section). At this time, we anticipate the PDM program will be a continuation of State monitoring activities similar to those which have been conducted by Minnesota, Wisconsin, and Michigan DNRs in recent years. These States comprise the core recovery areas within the DPS, and therefore the numerical recovery criteria in the Recovery Plan apply only to them. These activities will include both population monitoring and health monitoring of individual wolves. During the PDM period, the Service and the Recovery Team will conduct a review of the monitoring data and program. We will consider various relevant factors (including but not limited to mortality rates, population changes and rates of change, disease occurrence, range expansion or contraction) to determine if the population of gray wolves within the DPS warrants expanded monitoring, additional research, consideration for relisting as threatened or endangered, or emergency listing.

Minnesota, Wisconsin, and Michigan DNRs have monitored wolves for several decades with significant assistance from numerous partners, including the U.S. Forest Service, National Park Service, USDA–APHIS–Wildlife Services, Tribal natural resource agencies, and the Service. To maximize comparability of future PDM data with data obtained before delisting, all three State DNRs have committed to continue their previous wolf population monitoring methodology, or will make changes to that methodology only if those changes will not reduce the comparability of pre- and post-delisting data.

In addition to monitoring wolf population numbers and trends, the PDM will evaluate post-delisting threats, in particular human-caused mortality, disease, and implementation of legal and management commitments. If at any time during the monitoring period we detect a substantial downward change in the populations or an increase in threats to the degree that population viability may be threatened, we will evaluate and change (intensify, extend, and/or otherwise improve) the monitoring methods, if appropriate, and/or consider relisting the WGL DPS, if warranted.

This monitoring program will extend for 5 years beyond the effective delisting date of the DPS. At the end of the 5-year period we and the Recovery Team will conduct another review and post the results on our Web site. In addition to the above considerations, the review will determine whether the PDM program should be terminated or extended.

Required Determinations

National Environmental Policy Act

We have determined that an Environmental Assessment or an Environmental Impact Statement, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

Paperwork Reduction Act

Office of Management and Budget (OMB) regulations at 5 CFR part 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 include any collections of information that require approval by OMB under the Paperwork Reduction Act. As proposed under the *Post-delisting Monitoring* section above, gray wolf populations in the Western Great Lakes DPS will be monitored by the States of Michigan, Minnesota, and Wisconsin in accordance with their gray wolf State management plans. There may also be additional voluntary monitoring activities conducted by a small number of tribes in these three States. 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 standardized information from 10 or more non-Federal individuals, groups, or organizations per year, we will first obtain information collection approval from OMB.

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 multitribal organizations subsequent to this final rule in order to facilitate the transition to State and tribal management of gray wolves within the WGL DPS.

References Cited

A complete list of all references cited in this document is available upon request from the Ft. Snelling, Minnesota, Regional Office and is posted on our Web site (see **FOR FURTHER INFORMATION CONTACT** section above).

Author

The primary author of this final rule is Laura J. Ragan, U.S. Fish and Wildlife Service, Ft. Snelling, Minnesota, Regional Office (*see* **FOR FURTHER INFORMATION CONTACT** section above). The majority of this final rule is based on the February 8, 2007 final rule for which the primary author was Ronald L. Refsnider, U.S. Fish and Wildlife Service, Ft. Snelling, Minnesota, Regional Office).

List of Subjects in 50 CFR Part 17

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

Regulation Promulgation

■ Accordingly, we hereby 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; Public Law 99–625, 100 Stat. 3500; unless otherwise noted.

§ 17.11 [Amended]

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

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
MAMMALS							
*	*	*	*	*	*	*	
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) 17.84(i).
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(n).
*	*	*	*	*	*	*	

§ 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