Federal Register

Monday,
March 27, 2006

Part II

Department of the Interior

Fish and Wildlife Service

50 CFR Part 17

Endangered and Threatened Wildlife and Plants—Western Great Lakes Population of Gray Wolves; Proposed Rule

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018–AU54

Endangered and Threatened Wildlife and Plants; Designating the Western Great Lakes Population of Gray Wolves as a Distinct Population Segment; Removing the Western Great Lakes Distinct Population Segment of the Gray Wolf From the List of Endangered and Threatened Wildlife

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service) propose to establish the Western Great Lakes Distinct Population Segment (WGL DPS) of the gray wolf (*Canis lupus*). 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 Iowa; and the northwestern portion of Ohio. We further propose to remove the WGL DPS from the List of Endangered and Threatened Wildlife established under the Endangered Species Act of 1973, as amended (Act). We propose 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 species if delisted in the WGL DPS. The proposed rule, if finalized, would remove this DPS from the protections of the Act. This proposed rule would also remove the currently designated critical habitat for the gray wolf in Minnesota and Michigan and remove the current special regulations for gray wolves in Minnesota.

DATES: We request that comments be received by June 26, 2006 in order to ensure their consideration in our final decision. We have scheduled four informational meetings followed by public hearings for May 8, 10, 16, and 17, 2006. At each location the informational meeting will be held from 6 to 7:15 p.m., followed by a public hearing from 7:30 to 9 p.m.

ADDRESSES: You may submit comments and other information, identified by ''RIN 1018-AU54,'' by any of the following methods:

- Fish and Wildlife Service Region 3 Web Site: *http://www.fws.gov/midwest/wolf/* Follow the instructions found there.
- E-mail: *WGLwolfdelist@fws.gov*
- Fax: 612–713–5292. Put ''WGL Wolf Delisting; RIN 1018-AU54'' in the subject line.
- Mail: WGL Wolf Delisting, U.S. Fish and Wildlife Service, Whipple Federal Building, 1 Federal Drive, Fort Snelling, MN 55111–4056.
- Hand Delivery/Courier: WGL Wolf Delisting, Ecological Services—Room 646, U.S. Fish and Wildlife Service, Whipple Federal Building, 1 Federal Drive, Fort Snelling, MN 55111–4056.
- Federal eRulemaking Portal: *http://www.regulations.gov*. Follow the instructions found there for submitting comments.

All submissions received must include the agency name and Regulatory Information Number (RIN) for this rulemaking. For detailed instructions on submitting comments and additional information on the rulemaking process, see the ''Public Comments Solicited'' heading of the **SUPPLEMENTARY INFORMATION** section of this document.

Hearings: We have scheduled informational meetings followed by public hearings at the following four locations:

- May 8, 2006—Duluth, Minnesota. Meeting and hearing will be in the Northern Lights I Room at the Inn on Lake Superior, 350 Canal Park Drive.
- May 10, 2006—Wausau, Wisconsin. Meeting and hearing will be at the Westwood Conference Room of the Westwood Center, 1800 West Bridge Street.
- May 16, 2006—Marquette, Michigan. Meeting and hearing will be in the Michigan Room of the Don H. Bottum University Center, Northern Michigan University, 540 West Kaye Avenue. (Use parking lot #8.)
- May 17, 2006—Grayling, Michigan. Meeting and hearing will be held in the Evergreen Room of the Holiday Inn, 2650 Business Loop South I–75.

Additional details on the hearings, including maps, will be provided on our Web site (see **FOR FURTHER INFORMATION CONTACT**).

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, MN 55111–4056. Call 612–713–5350 to make arrangements. The comments and materials we receive during the comment period also will be made available for public inspection, by appointment, during normal business hours following the close of the comment period. See the ''Public Comments Solicited'' section of **SUPPLEMENTARY INFORMATION** for location information.

FOR FURTHER INFORMATION CONTACT: Ron Ressnider, 612–713–5350. Direct all questions or requests for additional information to the Service using the Gray Wolf Phone Line—612–713–7337, facsimile—612–713–5292, the general gray wolf electronic mail address—*GRAYWOLFMAIL@FWS.GOV*, or write to: GRAY WOLF QUESTIONS, U.S. Fish and Wildlife Service, Federal Building, 1 Federal Drive, Ft. Snelling, MN 55111–4056. Additional information is also available on our World Wide Web site at *http://www.fws.gov/midwest/wolf*. In the event that our internet connection is not functional, please contact the Service by the alternative methods mentioned above. Individuals who are hearing-impaired or speech-impaired may call the Federal Relay Service at 1–800–877–8337 for TTY assistance. Do not submit comments or other information by the methods described in this paragraph.

SUPPLEMENTARY INFORMATION:

Background

Biology and Ecology of Gray Wolves

Gray wolves are the largest wild members of the Canidae, or dog family, with adults ranging from 18 to 80 kilograms (kg) (40 to 175 pounds (lb)) depending upon sex and subspecies (Mech 1974). The average weight of male wolves in Wisconsin is 35 kg (77 lb) and ranges from 26 to 46 kg (57 to 102 lb), while females average 28 kg (62 lb) and range from 21 to 34 kg (46 to 75 lb) (Wisconsin Department of Natural Resources (WI DNR) 1999). Wolves' fur color is frequently a grizzled gray, but it can vary from pure white to coal black. Wolves may appear similar to coyotes (*Canis latrans*) and some domestic dog breeds (such as the German shepherd or Siberian husky) (*C. lupus familiaris*). Wolves' longer legs, larger feet, wider head and snout, and straight tail distinguish them from both coyotes and dogs.

Wolves primarily are predators of medium and large mammals. Wild prey species in North America include white-tailed deer (*Odocoileus virginianus*) and mule deer (*O. hemionus*), moose (*Alces alces*), elk (*Cervus elaphus*), woodland caribou (*Rangifer caribou*) and barren ground caribou (*R. arcticus*), bison (*Bison bison*), muskox (*Ovibos*

moschatus), bighorn sheep (*Ovis canadensis*) and Dall sheep (*O. dalli*), mountain goat (*Oreamnos americanus*), beaver (*Castor canadensis*), snowshoe hare (*Lepus americanus*), and muskrat (*Ondatra zibethicus*), with small mammals, birds, and large invertebrates sometimes being taken (*Chavez and Gese 2005, Mech 1974, Stebler 1944, WI DNR 1999, Huntzinger et al.* 2005). In the WGLDPS, during the last 25 years, wolves have also killed domestic animals including horses (*Equus caballus*), cattle (*Bos taurus*), sheep (*Ovis aries*), goats (*Capra hircus*), llamas (*Lama glama*), pigs (*Sus scrofa*), geese (*Anser sp.*), ducks (*Anas sp.*), turkeys (*Meleagris gallopavo*), chickens (*Gallus sp.*), guinea fowl (*Numida meleagris*), pheasants (*Phasianus colchicus*), dogs, cats (*Felis catus*), and captive white-tailed deer (Paul 2004, 2005; Wydeven 1998; Wydeven *et al.* 2001; Wydeven and Wiedenhoeft 1999, 2000, 2001, 2005).

Wolves are social animals, normally living in packs of 2 to 12 wolves. Winter pack size in Michigan's Upper Peninsula (UP) averaged from 2.7 to 4.6 wolves during the 1995 through 2005 period and ranged from 2 to 14 wolves per pack (Huntzinger *et al.* 2005). Pack size in Wisconsin is similar, averaging 3.8 to 4.1 wolves per pack, and ranging from 2 to 11 wolves in winter 2004–2005 (Wydeven and Wiedenhoeft 2005). In Minnesota the average pack size found in the 1988–89, 1997–98, and 2003–2004 winter surveys was higher—5.55, 5.4, and 5.3 wolves per pack, respectively (Erb and Benson 2004).

Packs are primarily family groups consisting of a breeding pair, their pups from the current year, offspring from one or two previous years, and occasionally an unrelated wolf. Packs typically occupy, and defend from other packs and individual wolves, a territory of 50 to 550 square kilometers (km^2) (20 to 214 square miles (mi^2)). Midwest wolf packs tend to occupy territories on the lower end of this size range. Michigan Upper Peninsula territories averaged 267 km^2 in 2000–2001 (Drummer *et al.* 2002), Wisconsin territories 37 mi^2 in 2004–2005 (Wydeven and Wiedenhoeft 2005), and Minnesota territory size averaged 102 km^2 in 2003–2004 (Erb and Benson 2004). Normally, only the top-ranking (''alpha'') male and female in each pack breed and produce pups. Litters are born from early April into May; they range from 1 to 11 pups, but generally include 4 to 6 pups (Michigan Department of Natural Resources (MI DNR) 1997; USFWS 1992; USFWS *et al.* 2001). Normally a pack has a single litter annually, but the production of 2 or 3 litters in one year has been routinely documented in Yellowstone National Park (USFWS *et al.* 2002; Smith *et al.* 2005).

Yearling wolves frequently disperse from their natal packs, although some remain with their natal pack. Adult wolves and pups older than 5 months also may disperse but at much lower frequencies (Fuller 1989). Dispersers may range over large areas as lone animals after leaving their natal pack or they may locate suitable unoccupied habitat and a member of the opposite sex and begin their own pack. These dispersal movements allow a wolf population to quickly expand and colonize areas of suitable habitat that are nearby or even those that are isolated by a broad area of unsuitable habitat. Additional details on extraterritorial movements are found in *Delineating the Midwestern Gray Wolf Population DPS*, below.

Recovery

Background—The gray wolf historically occurred across most of North America, Europe, and Asia. In North America, gray wolves formerly occurred from the northern reaches of Alaska, Canada, and Greenland to the central mountains and the high interior plateau of southern Mexico. The only areas of the conterminous United States that apparently lacked gray wolf populations since the last ice age are parts of California (but some authorities question the reported historical absence of gray wolves from parts of California (Carbyn *in litt.* 2000; Mech, U.S. Geological Survey, *in litt.* 2000)) and portions of the eastern and southeastern United States (areas occupied by the red wolf or a recently suggested eastern wolf, *C. lycaon* (Wilson et al. 2000; Grewal et al. 2004; White et al. 2001)). In addition, wolves were generally absent from the deserts and mountaintop areas of the western United States (Young and Goldman 1944; Hall 1981; Mech 1974; Nowak 2000).

European settlers in North America and their cultures often had superstitions and fears of wolves and a unified desire to eliminate them (Boitani 1995). Their attitudes, coupled with perceived and real conflicts between wolves and human activities along the western frontier, led to widespread persecution of wolves. Poison, trapping, snaring, and shooting spurred by Federal, State, and local government bounties extirpated this once widespread species from nearly all of its historical range in the 48 conterminous States.

Recovery Planning—Gray wolf populations in the United States are currently protected under the Act as a threatened species in Minnesota and endangered in the remaining 47 conterminous states and Mexico (50 CFR 17.11(h)), by separate regulations establishing three non-essential experimental populations (50 CFR 17.84(i), (k), and (n)), and by special regulations for Minnesota wolves (50 CFR 17.40(d)). The current status of wolves is discussed below under Previous Federal Action. At the time the Act was passed, only several hundred wolves occurred in northeastern Minnesota and on Isle Royale, Michigan, and a few scattered wolves may have occurred in the Upper Peninsula of Michigan, Montana, the American Southwest, and Mexico.

We approved the 1978 Recovery Plan for the Eastern Timber Wolf (Recovery Plan) on May 2, 1978 (USFWS 1978). We subsequently approved an updated and revised version on January 31, 1992 (USFWS 1992), which replaced the 1978 Recovery Plan. The 1978 Recovery Plan and its 1992 revision were intended to apply to the eastern timber wolf, *Canis lupus lycaon*, thought at that time to be the wolf subspecies that historically inhabited the United States east of the Great Plains (Young and Goldman 1944; Hall 1981; Mech 1974). Thus, these Recovery Plans cover a geographic triangle extending from Minnesota to Maine and into northeastern Florida. The Recovery Plan was based on the best available information on wolf taxonomy at the time of its original publication and subsequent revision. Since the publication of those Recovery Plans, several studies have produced conflicting results regarding the taxonomic identity of the wolf that historically occupied the eastern States. While this issue remains unresolved, this recovery program has continued to focus on recovering the wolf population that survived in, and has expanded outward from, northeastern Minnesota, regardless of its taxonomic identity.

The 1978 Recovery Plan and the 1992 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 (Rolf Peterson, Eastern Timber Wolf Recovery Team, *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.

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 Team established a planning goal of 1,250–1,400 animals for the Minnesota wolf population (USFWS 1992), which would increase the likelihood of maintaining its genetic diversity over the long term. This large Minnesota wolf population also provides the resiliency to reduce the adverse impacts of unpredictable demographic and environmental events. Furthermore, the Recovery Plan promotes a wolf population across 4 of 5 wolf management zones, encompassing about 40 percent of the State, further adding to the resiliency of the Minnesota wolf population. The State's wolf population currently is estimated to be more than double that numerical goal, and occupies all 4 management zones.

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 Recovery Plan provides two options for reestablishing this second viable wolf population. If it is an isolated population, that is, located more than 100 miles 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 not isolated, that is, located within 100 miles of a self-sustaining wolf population (for example, the Minnesota wolf population), a reestablished second population having a minimum of 100 wolves for at least 5 years would be considered viable.

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 Recovery Plan, except on Isle Royale (Michigan) or within Minnesota. The 1978 Recovery Plan identified potential gray wolf restoration areas throughout the eastern United States, including northern Wisconsin and Michigan and areas as far south as the Great Smoky Mountains and adjacent areas in Tennessee, North Carolina, and Georgia. The revised 1992 Recovery Plan dropped from consideration the more southern potential restoration areas, because recovery efforts for the red wolf were being initiated in those areas. The 1992 revision retained potential gray wolf re-establishment areas in northern Wisconsin, the 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). 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 delisting criterion for the second population (i.e., the wolf population that had developed in northern Wisconsin and the adjacent Upper Peninsula of Michigan). It stated that the numerical delisting criterion for the Wisconsin-Michigan population will be achieved when 6 consecutive late-winter wolf surveys documented that the population equaled or exceeded 100 wolves (excluding Isle Royale wolves) for the 5 consecutive years between the 6 surveys (Rolf Peterson, Eastern Timber Wolf Recovery Team, *in litt.* 1998). This second population is less than 200 miles from the Minnesota wolf population, and it has had a late-winter population exceeding 100 animals since 1994, and exceeding 200 animals since 1996, thus the recovery goals have been met.

The Recovery Plan has no goals or criteria for the gray wolf population on 546 sq km (210 sq mi) of Isle Royale, Michigan. The wolf population of Isle Royale is not considered to be an important factor in the recovery or long-term survival of wolves in the WGL DPS. This wolf population is small, varying from 12 to 30 animals in 2 or 3 packs over the last 20 years (Peterson and Vucetich 2005). Due to its small insular nature, it is almost completely isolated from other wolf populations and has never exceeded 50 animals. For these reasons, the Recovery Plan does not include these wolves in its recovery criteria, but recommends the continuation of research and complete protection for these wolves that is assured by National Park Service management (USFWS 1992). Unless stated otherwise in this proposal, subsequent discussions of Michigan wolves do not refer to wolves on Isle Royale.

The Recovery Plan recognizes the potential for wolves to come into conflict with human activities, and that such conflicts are likely to impede wolf recovery unless they can be reduced to socially tolerated levels. Among major recovery actions identified in the 1992 Recovery Plan is the need to ''minimize losses of domestic animals due to wolf predation.'' [p.6] The Recovery Plan recommends measures to avoid such conflicts and to reduce conflicts when they develop. These measures include promoting the re-establishment of wolf populations only in areas where such conflicts are likely to be relatively infrequent, a recommendation that wolf density in peripheral wolf range in Minnesota (Zone 4, 26 percent of the State) be limited to an average of one wolf per 50 square miles (128 sq km) [p.15], and a recommendation that wolves that move into Minnesota Zone 5 (about 61 percent of the State) ''should be eliminated by any legal means'' because livestock production and other human activities make that area ''not suitable for wolves.'' [p.20]

When wolves kill domestic animals, the Recovery Plan recommends that government agents remove those wolves. In Minnesota Zone 1 (4,462 sq mi in northeastern Minnesota), wolf removal should be by livetrapping and translocation, whereas in Zones 2 and 3 (1,864 and 3,501 sq mi in northeastern and north central Minnesota, respectively), those wolves may be removed by any means including lethal take. In Zones 4 and 5, the Recovery Plan recommends preventive depredation control be conducted by trapping wolves in the vicinity of previous depredation sites. Similarly, the Recovery Plan recommends management practices ''including the potential taking of problem animals'' for wolf populations that develop in Wisconsin and Michigan. [p.34] (Service 1992). Neither the trapping and translocations (Minnesota Zone 1) nor the preventive depredation control (Zones 4 and 5) have been implemented. Lethal taking of depredating wolves in Wisconsin and Michigan has occurred only on a very limited basis. More detailed discussion of wolf depredation control activities in the Midwest is found in Factor D.

Recovery of the Gray Wolf in the Western Great Lakes

Minnesota

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, Stenlund 1955), 350 to 700 in 1963 (Cahalane 1964), 750 in 1970 (Leirfallom 1970), 736 to 950 in 1971–72 (Fuller et al. 1992), and 500 to 1,000 in 1973 (Mech and Rausch 1975). 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, Minnesota population estimates increased (see Table 1 below). Mech estimated the population to be 1,000 to 1,200 in 1976 (USFWS 1978), and Berg and Kuehn (1982) 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 (Fuller et al. 1992).

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 five 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).

TABLE 1.—GRAY WOLF WINTER POPULATIONS IN MINNESOTA, WISCONSIN, AND MICHIGAN (EXCLUDING ISLE ROYALE) FROM 1976 THROUGH 2005. NOTE THAT THERE ARE SEVERAL YEARS BETWEEN THE FIRST FOUR 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
1993–94		57	57	114
1994–95		83	80	163
1995–96		99	116	215
1996–97		148	112	260
1997–98	2,445	180	140	320
1998–99		205	174	379
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		425	405	830

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). 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; Fuller et al. 1992). 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).

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 increase in the State's wolf population during that period (Erb and Benson 2004).

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). 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 from Leirfallom 1970). Fuller et al. (1992), 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). 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), 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). By that time the Minnesota wolf population was using most of the occupied and peripheral range identified by Mech et al. (1988). 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).

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). 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

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 in about 1975, and the WI DNR began wolf population monitoring in 1979–80 and estimated a statewide population of 25 wolves at that time (Wydeven and Wiedenhoeft 2001). 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 2005 (Wydeven et al. 2005).

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. 1995, 2005). 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. 2003). 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) noted that lone wolves are estimated to compose from 2 to 29 percent. 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.

During the July 2004 through June 2005 period, 63 radio collars were active on Wisconsin wolves, including 7 dispersers. At the beginning of the winter of 2004–05 radio collars were functioning in at least 39 packs. An estimated 425 to 455 wolves in 108 packs, including 11 to 13 wolves on Native American reservations, were in the State in early 2005, representing a 14 percent increase from 2004 (Wydeven et al. 2005a).

Wisconsin population estimates for 1985 through 2005 increased from 15 to 425–455 wolves (see Table 1 above) and from 4 to 108 packs (Wydeven et al. 2005a). This represents an annual increase of 21 percent through 2000, and an average annual increase of 11 percent for the most recent five years. This declining rate of increase may indicate that the Wisconsin wolf population is nearing the carrying capacity in the State.

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 42–44 wolves in 11 packs in the central forest wolf range (Zone 2 in the Wisconsin Wolf Management Plan) and an additional 19 wolves in 6 packs in the marginal habitat in Zone 3, located between Zone 1 (northern forest wolf range) and Zone 2 (Wisconsin DNR 1999, Wydeven et al. 2005a) (see Figure 3).

During the winter of 2002–03, 7 wolves were believed to be primarily occupying Native American reservation lands in Wisconsin (Wydeven et al. 2003); this increased to 11 to 13 wolves in the winter of 2004–05 (Wydeven in litt. 2005). The 2004–05 animals consisted of 2 packs totaling 7 to 9 wolves on the Bad River Chippewa Reservation and a pack of 4 wolves on the Lac Courtes Oreilles Chippewa Reservation, both in northern Wisconsin. There were an additional 24 to 26 wolves that spent some time on reservation lands in the winter of 2004–05, including the Lac du Flambeau Chippewa Reservation, the Red Cliff Chippewa Reservation, the St. Croix Chippewa Reservation, the Menominee Reservation, and the Ho Chunk Reservation. 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) and Wydeven et al. (1997) 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. 1997) resulting in a statewide population of 600 or more wolves.

Michigan

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 MI DNR began noting single wolves at various locations in the Upper Peninsula of Michigan. In 1989, a wolf pair was verified in the central Upper Peninsula, and it produced pups in 1991. Since that time, wolf packs have spread throughout the Upper Peninsula, with immigration occurring from Wisconsin on the west and possibly from Ontario on the east. They now are found in every county of the Upper Peninsula, with the possible exception of Keweenaw County (Huntzinger et al. 2005).

The MI DNR annually monitors the wolf population in the Upper Peninsula by intensive late-winter tracking surveys that focus on each pack. The Upper Peninsula 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 Upper Peninsula (Huntzinger et al. 2005). 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). 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, Huntzinger et al. 2005, Potvin et al. in press). 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 Upper Peninsula as increasing from 57 wolves in 1994 to 405 in 87 packs in 2005 (see Table 1 above). Over the last 10 years the annualized rate of increase has been about 18 percent (MI DNR 1997, 1999, 2001, 2003; Beyer et al. 2003, 2004; Huntzinger et al. 2005). 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 (about 25 percent per year from 1997 through 2000) and slower growth (about 14 percent from 2000 to the present time). Similar to Wisconsin, this may indicate a slowing growth rate as the population increases. The 2005 late-winter population was up 13 percent from the previous year's estimated population (Huntzinger et al. 2005). As with the Wisconsin wolves, the number of wolves in the Michigan Upper Peninsula 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 Upper Peninsula numbers have now surpassed the Federal criterion for an isolated wolf population of 200 animals for 6 successive late-winter surveys (FWS 1992).

In 2004–05, no wolf packs were known to be primarily using tribal-owned lands in Michigan (Beyer pers comm. 2005). Native American tribes in the Upper Peninsula 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 Upper Peninsula and range widely, tribal land is likely utilized periodically by wolves.

As mentioned previously, 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 small and isolated wolf population cannot 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 2004–05 (Peterson and Vucetich 2005).

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 2004a). 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). Recognizing the likelihood that small numbers of gray wolves will eventually move into the Lower Peninsula and form persistent packs (Potvin 2003, Gehring and Potter 2005 in press), 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 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, but there have been no reports in the last few years (Roger Collins, USFWS, in litt. 1998; Phil Mastrangelo, USDA–APHIS–Wildlife Services, Bismarck, ND, pers. comm. 2005).

An examination of eight skulls from North and South Dakota wolves indicates that seven likely had dispersed from Minnesota; the eighth probably came from Manitoba, Canada (Licht and Fritts 1994). Genetic analyses of an additional gray wolf killed in 2001 in extreme northwestern South Dakota and another killed in central Nebraska in 2002 (both outside of this proposed WGL DPS) indicate that they, too, originated from the Minnesota-Wisconsin-Michigan wolf population (Straughan and Fain 2002, Steve Anschutz, USFWS, Lincoln, NE, in litt. 2003).

Additionally, some wolves from the Minnesota-Wisconsin-Michigan population have traveled to other portions of the WGL DPS. In October 2001, a wolf was killed in north-central Missouri by a farmer who stated that he thought it was a coyote. The wolf's ear tag identified it as having originated from the western portion of Michigan's Upper Peninsula, where it had been captured as a juvenile in July 1999. A wolf, presumably from the Wisconsin or possibly Minnesota wolf population, was shot and killed in Marshall County, in north-central Illinois, in December 2002. A second wolf was killed by a vehicle strike in northeastern Illinois in February 2005, and a third (verified as originating from the Western Great Lakes wolf population) was killed in Pike County, Illinois, (near Quincy) in December 2005. Another Great Lakes wolf was found dead in Randolph County in east-central Indiana (about 12 miles from the Ohio border) in June 2003. That wolf originated in Jackson County, Wisconsin, based on a Wisconsin DNR ear tag that it carried (Wydeven and Wiedenhoeft 2003b).

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. The only exception is the NLP of Michigan, where several studies indicate a persistent wolf population may develop (Gehring and Potter in press, Potvin 2003), 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 maintaining viable recovered wolf populations in these areas will not be dependent in any way on wolves or wolf populations in other areas of the WGL DPS.

Previous Federal Action

On April 1, 2003, we published a final rule (68 FR 15804) that reclassified and delisted gray wolves, as appropriate, across their range in the 48 conterminous United States and Mexico. Within that rule, we established three DPSs 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 protections of the Act 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. In that final rule (on page 15806), we included a detailed summary of the previous Federal actions completed prior to publication of that final rule. The final rule is available at *http://www.fws.gov/midwest/wolf/esa-status/Reclass-final-fr.PDF*. Therefore, we will not repeat the details of that history in this proposal.

On January 31, 2005, and August 19, 2005, the U.S. District Courts in Oregon and Vermont, respectively, concluded that the 2003 final rule was ''arbitrary and capricious'' and violated the ESA (*Defenders of Wildlife* v. *Norton*, 03–1348–JO, D. OR 2005; *National Wildlife Federation* v. *Norton*, 1:03–CV–340, D. VT. 2005). The courts' rulings invalidated the April 2003 changes to the ESA listing for the gray wolf. These rulings had the effect of eliminating the three DPS listings and reverting all gray wolves south of Canada to endangered status, except those wolves in Minnesota retained their threatened status and the experimental population wolves in the northern U.S. Rockies and the Southwest retained their ''nonessential experimental'' status. These rulings also vacated the 2003 special rules under section 4(d) that authorized lethal control of problem wolves in the Eastern and Western DPSs. Because we had subsequently used the Eastern DPS as the basis for a July 21, 2004, gray wolf delisting proposal (69 FR 43664), that proposal could not be finalized.

On March 1, 2000, we received a petition from Mr. Lawrence Krak of Gilman, Wisconsin, and on June 28, 2000, we received a petition from the Minnesota Conservation Federation. Mr. Krak's petition requested the delisting of gray wolves in Minnesota, Wisconsin, and Michigan. The Minnesota Conservation Federation requested the delisting of gray wolves in a Western Great Lakes DPS. Because the data reviews resulting from the processing of these petitions would be a subset of the review begun by our July 13, 2000, proposal (65 FR 43450) to revise the current listing of the gray wolf across most of the conterminous United States, we did not initiate separate reviews in response to those two petitions. While we addressed these petitions in our July 21, 2004, proposed rule (69 FR 43664), this rule was mooted by the Court rulings. Therefore, this delisting proposal restates our 90-day findings that the action requested by each of the petitions may be warranted, as well as our 12-month finding that the action requested by each petition is warranted.

Distinct Vertebrate Population Segment Policy Overview

Pursuant to the ESA, we consider for listing any species, subspecies, or, for vertebrates, any DPS of these taxa if there is sufficient information to indicate that such action may be warranted. To interpret and implement the DPS provision of the ESA and Congressional guidance, the Service and the National Marine Fisheries Service (NMFS) published, on December 21, 1994, a draft Policy Regarding the Recognition of Distinct Vertebrate Population Segments under the ESA and invited public comments on it (59 FR 65884). After review of comments and further consideration, the Service and NMFS adopted the interagency policy as issued in draft form, and published it in the **Federal Register** on February 7, 1996 (61 FR 4722). This policy addresses the recognition of a

DPS for potential listing, reclassification, and delisting actions.

Under our DPS policy, three factors are considered in a decision regarding the establishment and classification of a possible DPS. These are applied similarly for additions to the list of endangered and threatened species, reclassification of already listed species, and removals from the list. The first two factors—discreteness of the population segment in relation to the remainder of the taxon (i.e., *Canis lupus*) and the significance of the population segment to the taxon to which it belongs (i.e., *Canis lupus*)—bear on whether the population segment is a valid DPS. If a population meets both tests, it is a DPS and then the third factor is applied—the population segment's conservation status in relation to the ESA's standards for listing, delisting, or reclassification (i.e., is the population segment endangered or threatened).

Analysis for Discreteness

Under our Policy Regarding the Recognition of Distinct Vertebrate Population Segments, a population segment of a vertebrate taxon may be considered discrete if it satisfies either one of the following conditions—(1) It is markedly separated from other populations of the same taxon (i.e., *Canis lupus*) as a consequence of physical, physiological, ecological, or behavioral factors (quantitative measures of genetic or morphological discontinuity may provide evidence of this separation); or (2) it is delimited by international governmental boundaries within which differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of section 4(a)(1)(D) of the ESA.

Markedly Separated From Other Populations of the Taxon—The western edge of the proposed Western Great Lakes Distinct Population Segment 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 proposed 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 this proposed 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. Wolf dispersal is expected to continue but 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. Dispersing wolves may encounter a mature wolf of the opposite sex outside the core wolf areas, but the lack of large expanses of unfragmented public land make it unlikely that any wolf packs will persist in these areas. 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. 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 satisfies the discreteness criterion.

Delimited by International Boundaries with Significant Management Differences Between the United States 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 29, 2005, through March 31, 2006 (Manitoba Conservation 2005a). Trapping wolves is allowed province-wide except in and immediately around Riding Mountain Provincial Park (southwestern Manitoba), with a current season running from October 14, 2005, through February 28 or March 31, 2006 (varies with trapping zone) (Manitoba Conservation 2005b). 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 Ministry of Natural Resources (MNR) 2005a). 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 proposed 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 proposed WGL DPS boundary would satisfy both conditions that can be used to demonstrate discreteness of a potential DPS.

Analysis for Significance

If we determine a population segment is discrete, we next consider available scientific evidence of its significance to the taxon (i.e., *Canis lupus*) to which it belongs. Our DPS policy states that this consideration may include, but is not limited to, the following—(1) Persistence of the discrete population segment in an ecological setting unusual or unique for the taxon; (2) evidence that loss of the discrete population segment would result in a significant gap in the range of the taxon; (3) evidence that the discrete population segment represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside its historic range; and/or (4) evidence that the discrete population segment differs markedly from other populations of the species in its genetic characteristics. Below we address Factors 1 and 2. Factors 3 and 4 do not apply to the proposed WGL wolf DPS and thus are not included in our analysis for significance.

Unusual or Unique Ecological Setting—Wolves within the proposed 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. Therefore, WGL wolves represent the only wolves in the United States occupying this province. Furthermore, WGL wolves represent the only use by gray wolves 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 (''* * * loss * * * would result in a significant gap in the range of the taxon'' (71 FR 6641)). 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. Without the recovered Western Great Lakes wolf metapopulation, there would not be a wolf population in the conterminous States east of the Rocky Mountains except for the red wolves being restored along the Atlantic Coast.

Conclusion

We conclude, based on our review of the best available scientific information, that the proposed WGL DPS is discrete from other wolf populations as a result of physical separation and the international border with Canada. The proposed DPS is significant to the taxon to which it belongs because it is the only occurrence 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 the wolves in the conterminous States. Therefore, we have determined that this population of wolves satisfies the discreteness and significance criteria required to designate it as a DPS. The evaluation of the appropriate conservation status for the WGL DPS is found below.

Delineating the WGL Gray Wolf Population DPS

To delineate the boundary of the WGL DPS, we considered the current distribution of the wolves in those areas we consider significant in the population and the potential dispersal distance wolves may travel from those core population areas. The WGL DPS boundary includes all of Minnesota, Wisconsin, and Michigan; the part of North Dakota that is north and east of the Missouri River upstream as far as Lake Sakakawea and east of Highway 83 from Lake Sakakawea to the Canadian border; the part of South Dakota that is north and east of the Missouri River; the parts of Iowa, Illinois, and Indiana that are north of Interstate Highway 80; and the part of Ohio north of Interstate Highway 80 and west of the Maumee River (at Toledo). (See Figure 1.) As discussed below, this DPS has been delineated to include the core recovered wolf population plus a zone around the core wolf populations. This geographic delineation is not intended to include all areas where wolves have dispersed from. Rather, it includes the area currently occupied by wolf packs in MN, WI, and MI; 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 MN, WI, and MI wolves disperse but where persistent packs are not expected to be established. The area surrounding the core wolf populations includes the locations of most known dispersers from the core populations, especially the shorter and medium-distance dispersers that are most likely to survive and potentially return to the core areas.

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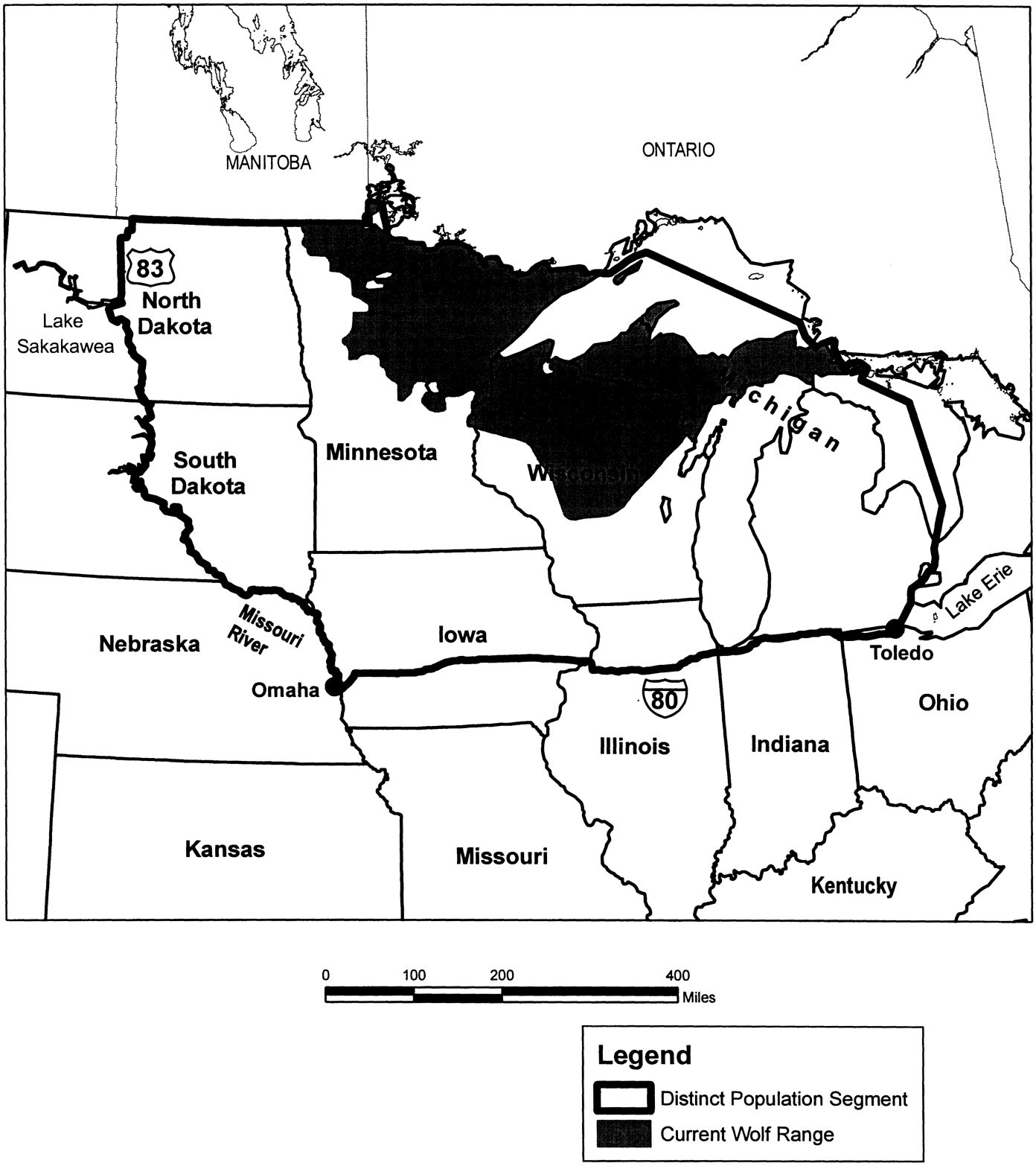
Figure 1. Western Great Lakes Distinct Population Segment



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The WGL areas that are regularly occupied by wolf packs are well documented in Minnesota (Erb and Benson 2004), Wisconsin (Wydeven et al. 2006), and the Upper Peninsula of Michigan (Huntzinger et al 2005). Wolves have successfully colonized most, perhaps all, suitable habitat in Minnesota. Minnesota data from the winter of 2003–2004 indicate that wolf numbers and density either have

continued to increase slowly or have stabilized since 1997–1998, and there was no expansion of occupied range in the State (Erb and Benson 2004). 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 and Wiedenhoeft 2005). The Upper Peninsula of Michigan has wolf packs throughout, although current population remains well below the estimated biological carrying capacity and will likely continue to increase in numbers in the UP for at least several more years (Mladenoff et al. 1997).

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 (Fuller et al. 2003, Boyd and Pletscher 1991) shows dispersal rates of 13 to 48 percent of the individuals in a pack. Sometimes the dispersal is temporary, and the wolf ends its extra-territorial movement by returning 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 may die while apparently continuing its dispersal movement, leaving unanswered the questions of how far it would have gone and whether it eventually would have returned to its natal area or population.

Published and unpublished scientific data provide a great deal of insight into the magnitude of extra-territorial movements, and document the following:

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 straight line distance of at least 550 mi. (886 km) northwest into Saskatchewan (Fritts 1983). Nineteen other primarily MN movements summarized by Mech (2005 in litt.) averaged 154 mi (248 km). Their straight-line distance of travel (i.e., from known starting location to most distant known location) ranged from 32–532 mi (53–886 km) with the straight-line maximum dispersal distance shown by known returning wolves ranging from 54 mi (90 km) to 307 mi (494 km).

Michigan—Drummer et al. (2002) reported 10 instances involving UP wolves. One of these wolves moved to northcentral 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).

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. 2005). 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 1988–1989 (Wydeven et al. 1995).

In December 2002 a wolf was shot and killed in Marshall County, Illinois. This wolf likely dispersed from the Wisconsin wolf population, nearly 200 miles (322 km) to the north (Great Lakes Directory 2003). Another wolf known to have come from a central Wisconsin wolf pack was found shot in Randolph County in east central Indiana about 12 miles from the Ohio border in June 2003. It had traveled a minimum distance of at least 420 miles (676 km) to get around Lake Michigan; it likely traveled much father than that unless it went through the city or suburbs of Chicago (Wydeven et al. 2004). Another likely Wisconsin wolf was shot in Pike County, Illinois, in late 2005. This animal was about 300 mi (180 km) from the nearest wolf packs in central Wisconsin.

North Dakota, South Dakota, and Nebraska—Licht and Fritts (1994) tabulated 10 gray wolves found dead in ND and SD from 1981 through 1992. Seven of these are believed to have originated from Minnesota, based on skull morphometrics. (Another probably originated in Manitoba and the likely origins of the other two wolves are unknown.) Although none of these wolves were marked or radio-tracked, making it impossible to determine the point of initiation of their journey, a minimum straight-line travel distance can be determined from the nearest wolf breeding range in MN. 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 population (Straughan and Fain 2002). The straight-line travel distance to the nearest Minnesota wolf pack is nearly 400 miles (644 km).

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). 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) reported on four such Minnesota wolves with a documented travel distance ranging from 305 to 2641 mi (490 to 4251 km) and an average travel route length of 988 mi (1590 km). Wydeven (1994) described a WI wolf that moved from northwestern WI 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 WI. The total travel distance was 278 mi (447 km) from her natal pack to the north-central WI location where she settled down.

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 distance of 2,550 mi (4251 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). While much longer movements have been documented, including some by WGL wolves, return movements to the vicinity of natal territories have not been documented for extra-territorial movements beyond 300 mi (480 km).

Based on extra-territorial movement data, we conclude that affiliation with the midwestern wolf population has

diminished and is essentially lost at a distance of 250 to 300 miles (400 to 480 km) beyond the outer edge of the areas of the WGL 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. Furthermore, wolves moving this distance outward from the core areas of Minnesota, Wisconsin, and Michigan will encounter landscape features that not only provide clear borders to delineate a DPS, but which are also at least partial barriers to further wolf movement, and that may—if crossed—impede attempts of wolves to return toward the WGL core areas. These 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. Although there is evidence that two Minnesota wolves have crossed the Missouri River and some wolves have crossed interstate highways, there is also evidence that some wolves are hesitant to cross highways (Kohn et al. 2000, Licht and Fritts 1994, Merrill and Mech 2000, Whittington et al. 2004, Wydeven et al. 2005a, but see Blanco et al. 2005). Interstate highways and smaller roads are a known mortality factor for wolves, adding to their function as a partial barrier to wolf movements (Blanco et al. 2005).

Summary of Factors Affecting the Species

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

A recovered population is one that no longer meets the ESA's definition of threatened or endangered. The ESA defines an endangered species as one that is in danger of extinction throughout all or a significant portion of its range. A threatened species is one that is likely to become endangered in the foreseeable future throughout all or a significant portion of its range. Determining whether a species is recovered requires consolidation of the same five categories of threats specified in section 4(a)(1). For species that are being considered for delisting, this analysis of threats is an evaluation of both the threats currently facing the species and the threats that could potentially affect the species in the foreseeable future after its delisting and the consequent removal of the Act's protections.

For the purposes of this notice, we consider ''foreseeable future'' to be 30 years. This is a period for which we can make reasonable assumptions, based on recent and current observations, regarding the continuation of current trends in human attitudes and behaviors, regulatory mechanisms, and environmental factors that will be the primary determinants of threats to wolf populations in the future.

For the purposes of this notice, the ''range'' of wolves in this WGL DPS is the area within the DPS boundaries where viable populations of the species now exist. However, a species' historical range is also considered because it helps inform decisions on the species' status in its current range. While wolves historically occurred throughout the geographic area of the DPS, large portions of its historical range are no longer able to support viable wolf populations.

Significance of a portion of the range is viewed in terms of biological significance rather than in quantitative terms. A portion of a species' range that is so important to the continued existence of the species that threats to the species in that area can threaten the viability of the species, subspecies, or DPS as a whole is considered to be a significant portion of the range. In regard to the WGL DPS, the significant portions of the gray wolf's range are those areas that are important or necessary for maintaining a viable, self-sustaining, and evolving representative meta-population or multiple separate populations in order for the WGL DPS to persist into the foreseeable future.

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

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 1995).

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 Upper Peninsula 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 Upper Peninsula 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 (Mech 1995). 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. An inadequate prey density and a high level of human persecution appear to be the only factors that limit wolf distribution (Mech 1995).

An indication of the availability of suitable habitat in portions of historical range is the increase in Midwest wolf population levels. In Minnesota, four comparable surveys of wolf numbers and range have been carried out since 1979. These surveys estimated that there

were 1,235, 1,500–1,750, 2,445, and 3020 wolves in Minnesota in 1979, 1989, 1998, and 2004 respectively (Berg and Kuehn 1982, Fuller *et al.* 1992, Berg and Benson 1999, Erb and Benson 2004) (see ''Recovery in the Western Great Lakes DPS,'' above, for additional details on the increase in numbers and range of Minnesota wolves).

Hearne et al. (2003), determined that a viable wolf population (that is, having less than 10 percent chance of extinction over 100 years) should consist of at least 175 to 225 wolves, and they modeled various likely scenarios of habitat conditions in the Upper Peninsula 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.

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, Voyageurs NP, in litt. 2005, based on 2000–2001 data).

In 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 Upper Peninsula 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 (Gary Huschle, USFWS, 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 (Barbara Boyle, USFWS, 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 (Mary Stefanski, USFWS, pers. comm. 2004; Michelle McDowell, USFWS, 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 (Dave Olson, USFWS, in litt. 2005). Necedah NWR currently has 2 packs with at least 13 wolves in the packs (Joel Trick, USFWS, in litt. 2005). Over the past 10 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 (Jeanne Holler, USFWS, in litt. 2005).

Suitable Habitat Within the Western Great Lakes Gray Wolf DPS

Various researchers have investigated habitat suitability for wolves in the eastern portion of the United States. In recent years, most of these efforts have focused on using 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, 1997, 1998, 1999; Harrison and Chapin 1998; Wydeven et al. 2001; Potvin et al. in press).

Road density has largely been adopted as the best predictor of habitat suitability in the Northeast and 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 square mile (0.6 to 0.7 km/km^2) (Thiel 1985; Jensen et al. 1986; Mech et al. 1988; Fuller et al. 1992). Work by Mladenoff and associates indicated that colonizing wolves in Wisconsin preferred areas where road densities were less than 0.7 mi/sq mi (0.45 km/sq km) (Mladenoff et al. 1995). 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. in press) and may prevent recolonization of portions of the UP.

Road density increases 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; Mech and Goyal 1983; Mladenoff et al. 1995). 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/sq mi (0.84 km/sq km), but human-related factors produced 71 percent of the wolf deaths in areas with higher road densities (Wydeven et al. 2001).

Some researchers have used a road density of 1 mi/sq mi (0.6 km/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/sq mi (0.45 km/sq km) are estimated to have a greater than 50 percent probability of wolf pack colonization, and areas where road density exceeded 1 mi/sq mi (0.6 km/sq km) have less than a 10 percent probability of occupancy (Mladenoff et al 1995; Mladenoff and Sickley 1998; Mladenoff et al. 1999; Wydeven et al. 2001). 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 areas 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; Wydeven et al. 2001).

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) (Wisconsin DNR 1999). The late winter 2004–05 Wisconsin wolf survey identified packs occurring throughout the central Wisconsin forest area and across the northern forest zone, 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 and Wiedenhoeft 2005b). 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, which probably lacks a suitable ungulate prey base during winter months (Huntzinger et al. 2005).

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 Northern Lower Peninsula (NLP) of Michigan (Mladenoff et al. 1997; Mladenoff et al 1999; Potvin 2003; Gehring and Potter, in press, Wildlife Soc. Bull.). One Michigan study (Gehring and Potter, in press) estimates that these areas could host 46 to 89 wolves; a masters degree thesis investigation (Potvin 2003) estimates that 110–480 wolves could exist in the NLP. The NLP is separated from the UP by the Straits of Mackinac, whose 4-mile width freezes during mid- and late-winter during 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). 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); additional surveys are being conducted in February and March 2006. However, it probably is only a matter of several years before wolf pup production is documented in the NLP.

These NLP patches of suitable habitat contain a great deal of private land, are small in comparison to the occupied habitat on the UP and in MN and WI, and are intermixed with agricultural and higher road density areas (Gehring and Potter in press). Therefore, continuing wolf immigration from the UP may be necessary to maintain an NLP population. The Gehring and Potter study 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. 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 in press; Potvin 2003). 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).

It is generally recognized that Minnesota, Wisconsin, and Michigan, provide the only sufficiently large areas with adequate wild ungulate prey base and low road and human density within this proposed DPS (USFWS 1992). The only other area within the proposed 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. Road densities within the Turtle Mountains are below the thresholds believed to limit colonization by wolves. However, this habitat area is only on the order of 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). This area is far less than the recommendation in the Recovery Plan for the Eastern Timber Wolf as the minimum area of habitat necessary to support a wolf population (FWS 1992). Furthermore, the Manitoba portion of the Turtle Mountains is outside the currently listed area for the gray wolf and outside this proposed 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 significant portion of the range 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).

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). In Wisconsin, suitable habitat is largely occupied, but there are some gaps in the northeastern part of the State where there appears to be room for additional packs to occupy areas between existing packs (Wydeven et al. 2005a). 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, Potvin et al. in press), including every county of the UP except possibly Keweenaw. Wolf density is lower in the northern and eastern portions of the UP where lower deer numbers may prevent establishment of packs in some areas (Potvin et al. in press), but over the next several years packs may be able to fill in some of the currently unoccupied areas. The NLP of Michigan appears to have the only unoccupied, but potentially suitable, wolf habitat in the Midwest that is of sufficient size to maintain wolf packs (Gehring and Potter in press; Potvin 2000), although its small size and fragmented nature may mean that NLP wolf population viability may be dependent upon continuing immigration from the UP. Other potentially suitable wolf habitat areas within the proposed DPS boundary, including the Turtle Mountains in North Dakota, are too small to consistently support a viable resident wolf population, and cannot be considered a significant portion of wolf range in the WGL DPS.

Based on the biology of the gray wolf and conservation biology principles, the Recovery Plan (USFWS 1992) specifies that two populations (or a single metapopulation) are needed to ensure long-term viability. The Recovery Plan indicates the importance of a large wolf population in Minnesota Wolf Management Zones 1 through 4 (identical to Zone A in the 2001 Minnesota Wolf Management Plan) and the need for a second wolf population occupying 10,000 mi^2 or 5,000 mi^2 elsewhere in the eastern United States (depending on its isolation from the Minnesota wolf population. Based on

these recovery criteria, the portions of the range that support these two wolf populations are a Significant Portion of the Range (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 managing against 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's roughly 60 percent of the State as not an important part of the range of the gray wolf.

Similarly, other portions of the WGL DPS that lack suitable habitat, or only have areas of suitable habitat that are below the areal thresholds specified in the Recovery Plan and/or are highly fragmented, cannot be considered a significant portion of the range of the gray wolf in the WGL DPS. These areas include North Dakota, South Dakota, Iowa, Illinois, Indiana, Ohio, Wisconsin Wolf Management Zones 3 and 4 (WI DNR 1999), and most of the Lower Peninsula of Michigan.

The only part of Michigan's Lower Peninsula that warrants any consideration for inclusion in the SPR for the WGL DPS is composed of those areas of fragmented habitat studied by Gehring and Potter (in press) and Potvin (2003). However, this amounts to less than half of the areal thresholds identified by the Recovery Plan for the establishment of viable populations, so these NLP areas may have difficulty maintaining wolf populations even with the help of occasional immigration of wolves from the UP (see F. Suitable Habitat Within the WGL DPS for additional discussion). These potentially suitable habitat areas are not likely to substantially contribute to maintaining a viable wolf population in Michigan, and they are not necessary to maintain a second viable wolf population in the WGL DPS. In fact, while the UP wolves will be significant to any NLP wolf population that may develop, the reverse will not be true. Thus, we conclude that the NLP is not a significant part of the range of the gray wolf in the WGL DPS.

Based on three decades of wolf research and implementing wolf recovery actions, the Recovery Plan, our analysis of five categories of threats and potential threats to the species, and the numerical growth and geographic expansion of the Midwest's wolf population, we have concluded that the wolf population has expanded to the extent that it now occupies the SPR within the DPS. The species has expanded to the extent that the currently occupied range in the WGL DPS exceeds that portion of the species' historical range in the DPS that is necessary to avoid the likelihood of extinction in the DPS for the foreseeable future.

While there are large areas of historical range within the DPS that are unoccupied by the species, these areas are almost completely lacking suitable habitat, and there is little likelihood that they can play a meaningful role in ensuring the persistence of a viable wolf population in the WGL DPS. We have assessed the threats to wolves throughout the DPS, and 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 Upper Peninsula of Michigan. Therefore, 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 significant portion of the range for the WGL DPS.

In summary, wolves currently occupy the vast majority of the suitable habitat in the WGL DPS. Unoccupied potentially suitable habitat exists in small and fragmented parcels and would neither make a substantial contribution to wolf population viability in the DPS nor constitute a biologically significant portion of gray wolf range in the WGL DPS. Furthermore, threats to wolves in the unoccupied portions of the DPS are inconsequential to the long-term viability of wolf populations in the DPS. Therefore, within the WGL DPS, gray wolves are not in danger of extinction now, nor are they likely to be so in the foreseeable future, in all or in a significant portion of their range due to inadequate or threatened suitable habitat or contraction of their range.

Prey

Wolf density is heavily dependent on prey availability (e.g., expressed as ungulate biomass, Fuller 1989), 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 2001:25), 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). 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 MN deer harvest is in the Forest Zone, which encompasses most of the occupied wolf range in the State (Lennarz 2005). 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 Upper Peninsula of Michigan are at historically high levels. Wisconsin's pre-season deer population has exceeded 1 million animals since 1984, and hunter harvest has exceeded 400,000 deer in 7 of the last 10 years. A record harvest of 517,169 deer occurred in the 2004 deer season (WI DNR web site, accessed Jan. 27, 2006). Michigan's pre-season deer population was approximately 1.7 million deer, with about 336,000 residing in the UP. Currently MI DNR is proposing revised deer management goals to guide management of the deer population

through 2010. The proposed UP goal range is 323,000 to 411,000 (MI DNR 2005 web site accessed Jan. 31, 2006), 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 and most of the suitable habitat in the WGL DPS. Unsuitable habitat, and small, fragmented areas of suitable habitat away from these core areas, largely represent geographic locations where wolf packs cannot persist. Although they may have been historical habitat, many of these areas are no longer suitable; none of them are important or necessary for maintaining a viable, self-sustaining, and evolving representative wolf population in the WGL DPS into the foreseeable future, and they are not a significant portion of the range 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, because much important wolf habitat 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

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

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 at least several 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 coterminous 48 States, such 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) (William Berg, MN DNR, *in litt.* 1998; Mech, *in litt.* 1998; Wydeven 1998; Roell, *in litt.* June 22, 2004 & July 19, 2005).

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). Similarly, Wisconsin and Michigan DNRs will continue to trap wolves for radio-collaring, examination, and health monitoring for the foreseeable future (WI DNR 1999, WI DNR 1997). 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 has been minimal (see below) 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—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. 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.

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 United States (Brand *et al.* 1995, WI DNR 1999). 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). Minnesota wolves, however, may have been exposed to the virus as

early as 1973 (Mech and Goyal 1995). 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). 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), 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). CPV has been detected in nearly every wolf population in North America including Alaska (Bailey *et al.* 1995) 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), 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). Additional unpublished data gathered since 1995 indicate that CPV had reduced wolf population growth in that area from 1979 to 1989, but not since that period (Mech *in litt.* 1999). 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). 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 2002a, 2003a, 2004a, 2005). 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.

Canine parvovirus, hypothesized to have been introduced to the island by a dog whose owners visited the island over the Fourth of July holiday, is considered to have been the cause of the precipitous decline of the isolated Isle Royale, Michigan, population in 1981–82. The island's gray wolf population dropped from 30 wolves in 1981 to only 14 in 1982, due in large part to 100 percent pup mortality (at least 9 pups) in 1981 (Peterson and Vucetich 2002). CPV appears to have disappeared from the island by 1989, but the wolf population remained low through 1995, before commencing an increase that continued into 2005 (Peterson and Vucetich 2005). Factors other than disease, however, may have caused, or contributed to, high mortality and a low level of reproductive success post-CPV decline, including a low level of genetic diversity and a prey population composed of young healthy moose that may make it difficult to secure sufficient prey for pups (Peterson et al. 1998).

Similar to Wisconsin wolves, serological testing of Michigan wolves captured from 1992 through 2001 (most recent available data) shows that the majority of Upper Peninsula 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 (Kerry Beheler, WI DNR Wildlife Health Specialist, *in litt.* undated and April 14, 2004). There are no data showing any CPV-caused wolf mortality or population impacts to the gray wolf population on the Upper Peninsula, but few wolf pups are handled in the UP (Peterson *et al.* 1998, Hammill pers. comm. 2002, Beyer *in litt.* 2006), 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 Upper Peninsula 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).

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). 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 (Nancy 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 (Shelley and Gehring 2002).) Such data show that over the last six years 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, 2002a, 2003a, 2004a, 2005). 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). However, not all mangy wolves succumb; other observations showed that some mangy wolves are able to survive the winter (Wydeven *et al.* 2000, 2001).

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) from mange in Wisconsin in 2003 may have had more severe effects on pup survival than in previous years (Wydeven and Wiedenhoeft 2004). 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).

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). 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 2001–2004 bioyears. However, the sample sizes are too small to reliably detect a trend (MI DNR, 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.* 2005).

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 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, MN DNR *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 1997–1998 (Van Deelen 2005). 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, 2005). 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 (Kreeger 2003). 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.

The dog louse (*Trichodectes canis*) has been detected in wolves in Ontario, Saskatchewan, Alaska, Minnesota, and Wisconsin (Mech *et al.* 1985, Kreeger 2003, 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 (Brand *et al.* 1995). 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. Even though observed in nearly 4 percent in a sample of 391 Minnesota wolves in 2003–05

(Paul 2005 *in litt.*), 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). 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). CDV mortality among wild wolves has been documented only in two littermate pups in Manitoba (Carbyn 1982), in two Alaskan yearling wolves (Peterson *et al.* 1984), and in a single Wisconsin pup (Wydeven and Wiedenhoeft 2003b). Carbyn (1982) 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 2002–2004 (Wydeven and Wiedenhoeft 2004b, 2005). However, there has been only a single CDV mortality documented among Midwestern wolves (Wydeven and Wiedenhoeft 2003b), and continued strong recruitment in Wisconsin and elsewhere in North American wolf populations indicates that distemper is not likely a significant cause of mortality (Brand 1995).

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, Hassett *in litt.* 2003, Johnson 1995, Mech and Kurtz 1999, Mech *et al.* 1985, Thomas *in litt.* 1998, WI DNR 1999, Kreeger 2003). Continuing wolf range expansion, however, likely will provide new avenues for exposure to several of these diseases, especially canine heartworm, rabies, and bovine tuberculosis (Thomas *in litt.* 2000), further emphasizing the need for disease monitoring programs. In addition, the possibility of new diseases developing and existing diseases, such as chronic wasting disease, West Nile Virus and canine influenza (Crawford *et al.* 2005), 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.

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 (MI DNR 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).

Many of the diseases and parasites are known to be spread by wolf-to-wolf contact. Therefore, their incidence may increase as wolf densities increase in the more recently colonized areas. 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). 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 (MI DNR 1997). 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 after 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. To date, however, the number of wolves subject to disease testing has not been reduced, with 27 wolves captured and tested in the 9 months of 2004 following State delisting, compared to 22 in 2002 and 19 in 2003 (Wydeven and Wiedenhoeft 2004b, 2005). The State will continue to test for disease and parasite loads through periodic necropsy and scat analyses. The 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).

The Minnesota Wolf Management Plan (MN DNR 2001) 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.'' 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.'' 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. 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 of the isolated Isle Royale wolf population in Michigan. Sarcoptic mange has affected wolf recovery in Michigan's Upper Peninsula and in Wisconsin over the last ten years, and it is recognized as a continuing problem. 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.

Predation

No wild animals habitually prey on gray wolves. Large prey, such as deer, elk, or moose (Mech and Nelson 1989, Smith et al. 2001), or other predators, such as mountain lions (*Felis concolor*) or grizzly bears (*Ursus arctos horribilis*) where they are extant (USFWS 2005), 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. 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, Wydeven and Wiedenhoeft 2001a, 2002, 2003a, 2004a, 2005). Gogan *et al.* (1997) studied 31 radio-collared wolves in northern Minnesota from 1987–91 and found that 3 (10 percent) were killed by other wolves. Intra-specific strife was the primary cause of mortality within Voyageurs National Park. 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 United States 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.)

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 1995 period, only 1 of 27 (4 percent) known mortalities was from that cause; but from July 1995 through June 1998, 5 of the 26 (19 percent) known mortalities resulted from vehicle collisions (WI DNR 1999, Wydeven 1998). From 2002 through 2004, 7 of 45 (16 percent) known mortalities were from that cause (Wydeven and Wiedenhoeft 2003a, 2004a, 2005).

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; Wydeven and Wiedenhoeft 2003a, 2004a, 2005).

It appears that in Wisconsin, vehicle collision has been an increasing mortality factor, while illegal shooting has not increased, and shooting may have declined slightly in recent years. All human-caused mortality factors (excluding 2 depredation control actions) resulted in 35 of 57 (61 percent) diagnosed deaths of radio-collared wolves from October 1979 through 1998, but only 20 of 41 deaths (49 percent) from 2002 through 2005 (Wisconsin DNR 1999; Wydeven and Wiedenhoeft 2003a, 2004a, 2005).

In the Upper Peninsula 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 Upper Peninsula during that period, about one-third of all the known mortalities were from vehicle collisions (MI DNR 1997). 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 (MI DNR, unpublished data).

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 60 percent of the deaths (Gogan et al. 1997).

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) found an annual human-caused mortality rate of 41 percent. Fuller (1989) 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). 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 Upper Peninsula, 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 one or more mortality rates that wolf population experiences. Based on 19 studies by other wolf researchers, Fuller et al. (2003) concludes that human-caused mortality can replace about 70 percent of other forms of mortality.

Fuller et al. (2003) 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 at some point 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.

D. The Adequacy or Inadequacy of Existing Regulatory Mechanisms

Human activities may adversely affect wolf abundance and population viability in a variety of ways—by degrading or reducing the wolf habitat and range (Factor A); by excessive mortality via commercial or recreational harvest (Factor B); by acting as a predator of wolves and killing them for other reasons, to reduce perceived competition for wild ungulates, or in the interests of human safety; by serving as a vector for wolf-impacting diseases or parasites (Factor C); and in other ways (Factor E). Following Federal delisting under the Act, many of these human activities would be regulated or prohibited by various regulatory mechanisms implemented by State, Federal, or Tribal agencies. Therefore, the remaining human activities with the potential to impact wolf populations are discussed under this factor (Factor D). We will compare current regulatory mechanisms within the DPS with the future mechanisms that will provide the framework for wolf management after delisting.

Regulatory Assurances in States Within the Significant Portion of the Range

State Wolf Management Planning. In late 1997, the Michigan Wolf Management Plan was completed and received the necessary State approvals. The Wisconsin Natural Resources Board approved the Wisconsin Wolf Management Plan in October 1999. The MN DNR prepared a Wolf Management Plan and an accompanying legislative bill in early 1999 and submitted them to the Minnesota Legislature. The Legislature, however, failed to approve the Minnesota Plan in the 1999 session. In early 2000, the MN DNR drafted a second bill that would have resulted in somewhat different wolf management and protection than the 1999 bill. The legislature did not pass the 2000 Minnesota wolf management bill, but instead passed separate legislation directing the DNR to prepare a new management plan based upon various new regulatory provisions that addressed wolf protection and the take of wolves. The MN DNR completed the Minnesota Wolf Management Plan (MN Plan) in early 2001 (MN DNR 2001).

The Minnesota Wolf Management Plan. The MN Plan is based, in part, on the recommendations of a State wolf management roundtable and on a State wolf management law enacted in 2000. 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.'' 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. Additional aspects of the Minnesota Plan are discussed here.

The Minnesota Plan divides the State into two wolf management zones-Zones A and B (see Figure 2 below). Zone A corresponds to wolf management zones 1 through 4 (an approximately 30,000 mi^2 area in northeastern Minnesota) in the Service's Eastern Recovery Plan, whereas Zone B constitutes zone 5 in the Eastern Recovery Plan. 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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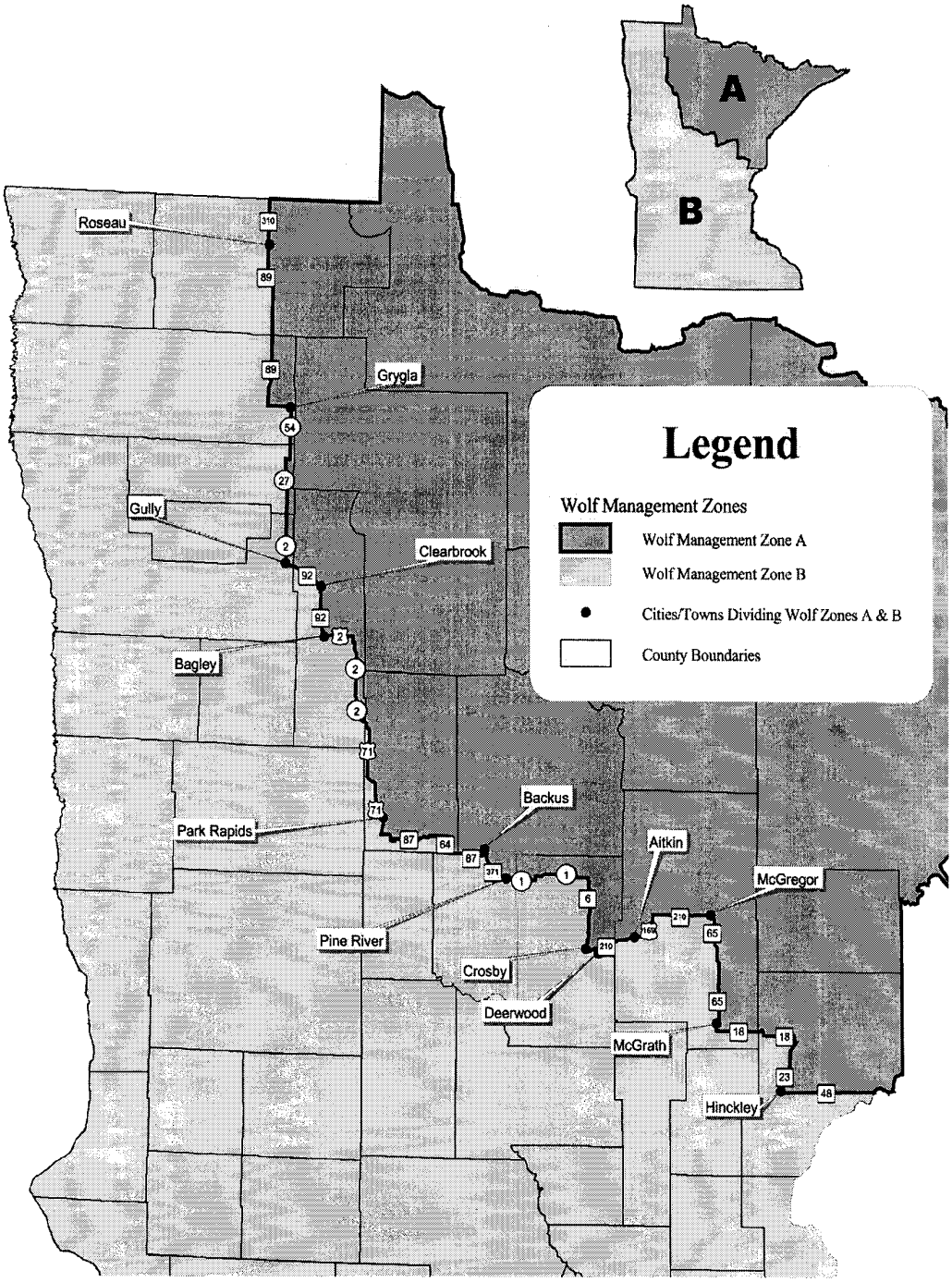
Figure 2. Minnesota wolf management zones.



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MN DNR plans to allow wolf numbers and distribution to naturally expand, and if any winter population estimate is below 1,600 wolves, it would take actions to ''assure recovery'' to 1,600 wolves. 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 no later than the fifth year 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 (Erb 2005) to help ascertain annual trends in wolf population or range.

Minnesota (MN DNR 2001) 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. 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). These are all measures that have been in effect for years in Minnesota, although ''increased enforcement'' of State laws against take of wolves (MN DNR 2001) 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. We do not expect the State's efforts will result in the reduction of illegal take of wolves from existing levels, but these measures may 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). 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).

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).

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 MN 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 (MN Statutes 97B.645 Subdiv. 9; MN DNR 2001). The MN 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, well above the Federal Recovery Plan's 1250–1400 for the State (USFWS 1992).

Depredation Control in Minnesota

Wolves that have attacked domestic animals in Minnesota have been killed by designated government employees under the authority of a special regulation under section 4(d) of the Act since the 1978 reclassification of wolves to threatened status. During the period from 1980–2004, 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 populations) 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 2000–04 an average of 127 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).

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 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).

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. The Minnesota statute also requires MDA to periodically update its BMPs to incorporate new practices that it finds would reduce wolf depredation.

Following Federal delisting, depredation control would be authorized under Minnesota State law and conducted in conformance to the Minnesota Wolf Management Plan (MN DNR 2001). The Minnesota Plan divides the State into Wolf Management Zones A and B. Zone A comprises the current Federal Wolf Management Zones 1–4, covering 30,728 sq. mi., approximately the northeastern third of the State. Zone B is identical to the current Federal Wolf Management Zone 5, and contains the 48,889 sq. mi. that make up the rest of the State (MN DNR 2001). The statewide survey conducted during the winter of 2003–04 provided an estimate that there were approximately 2,570 wolves in Zone A and 450 in Zone B (J. Erb, MN DNR, *in litt.* 2005). As discussed in Recovery, the Federal planning goal for Zones 1–4 is 1251–1400 wolves and no wolves in Zone 5 (USFWS 1992).

Currently, while federally-protected as a threatened species in Minnesota, no control of depredating wolves is allowed in Zone 1. In Zones 2 through 5 employees or agents of the Service (including USDA–APHIS–Wildlife Services) or MN DNR may take 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 of that year 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 follow informal 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).

Post-Delisting Depredation Control in Minnesota

Upon Federal delisting, wolf depredation control would be modified under Minnesota's Wolf Management Plan, with the greatest change occurring in Zone B. In Zone A, if DNR verifies that a wolf destroyed any livestock, domestic animal, or pet, trained and certified predator controllers may take wolves within a one-mile radius of the depredation site for up to 60 days. 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. The DNR may open a control area in Zone B anytime within five years of a verified depredation loss upon request of the landowner.

The Minnesota plan would 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 ''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. MN DNR will investigate any private taking of wolves in Zone A. The Minnesota Plan would also allow persons to harass wolves anywhere in the State within 500 yards of ''people, buildings, dogs, livestock, or other domestic pets or animals'' (MN DNR 2001). Harassment may not include physical injury to a wolf.

To protect their domestic animals in Zone B, individuals do not have to wait for an immediate threat 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.

This expansion of depredation control activities will not threaten the conservation of wolves in the State. Significant changes in wolf depredation control under State management would primarily be restricted to Zone B, which is outside of the area that our Recovery Plan found was necessary for wolf recovery (USFWS 1992), and 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 in the depredation control area from approximately 1 to 3 square miles and an extension of the control period to 60 days, depredation control will remain ''very localized'' in Zone A. The requirement that depredation control activities be conducted only in response to verified wolf depredation in Zone A played a key role in the team's evaluation (R. Peterson, *in litt.* 2001). Depredation control would be allowed throughout Zone A, which includes an area (Federal Wolf Management Zone 1) where such control has not been permitted under Federal 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 depredation incidents in that Zone is expected to be low, resulting in a correspondingly low number of depredating wolves being killed there after delisting.

Within Zone B, the Minnesota wolf management plan would 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 potentially subject to substantial reduction in numbers, and one could even argue that 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, and any estimate of future wolf numbers in Zone B would be highly speculative at this time. The fact that this broad authority is limited to Zone B is 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.'' The Federal Recovery Plan envisioned that the Minnesota numerical recovery goal would be achieved solely in Zone A (Federal Zones 1–4) (USFWS 1992), and that has occurred. 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.

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). These and other activities contained in their plan would be essential in meeting their population goal of a minimum statewide winter population of 1,600 wolves, which exceeds the Recovery Plan's criteria of 1,251 to 1,400 wolves.

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. Thus, even after Federal wolf delisting, each State will be managing for a wolf population at, or in excess of, the 200 wolves identified in the Federal Recovery Plan as necessary for a viable isolated wolf population. We support this approach and believe it provides strong assurances that the gray wolf will remain a viable component of the WGL DPS for the foreseeable future. The WI Plan updates are expected to be completed and approved by the Natural Resources Board in mid-2006 (Wydeven, pers. comm. 2006).]

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 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). 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 sets a management goal of 350 wolves, well above the 200 wolves specified in the Federal recovery plan for a viable isolated wolf population. The WI Plan is currently being updated to reflect current wolf numbers, additional knowledge, and issues that have arisen since its 1999 completion. This update will be put into service in the form of one or more appendices to the 1999 plan, rather than as a major revision to the plan. Several components of the plan that are key to our evaluation are not expected to change; specifically, the State wolf population goal of 350 animals, the boundaries of the four wolf management zones, and the guidelines for the wolf depredation control program will not undergo significant alteration during the update process (Wydeven pers. comm. 2005, Jurewicz pers. comm. 2005, Wydeven 2006).

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.

Cooperative habitat management will be promoted with public and private landowners to maintain existing road densities in Zones 1 and 2 (see Figure 3), protect wolf dispersal corridors, and manage forests for deer and beaver. Furthermore, in Zone 1, a year-around prohibition on tree harvest within 330 feet of den and rendezvous sites, and seasonal restrictions to reduce disturbance within one-half mile, will be DNR policy on public lands and will be encouraged on private lands.

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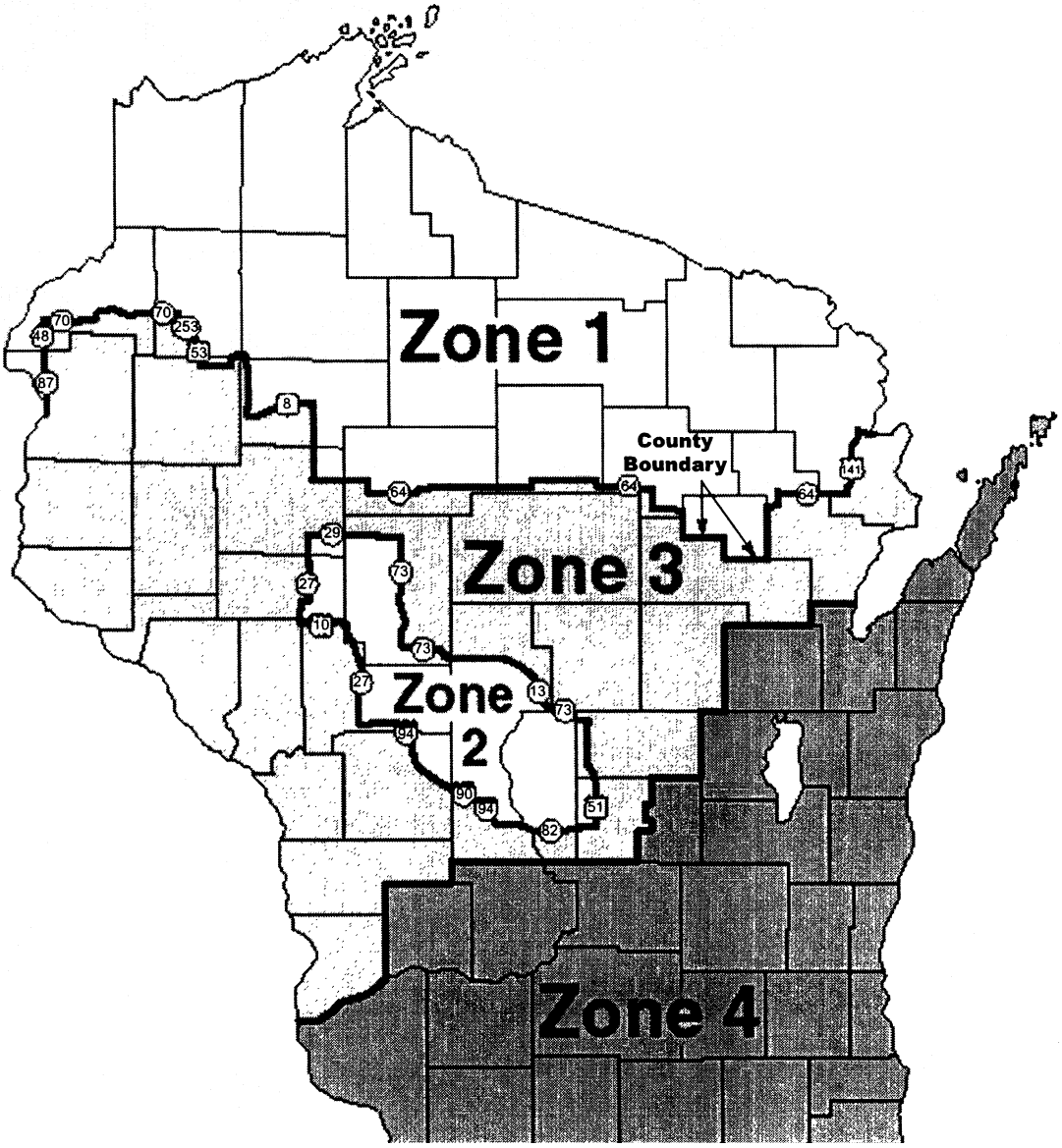
Figure 3. Wisconsin wolf management zones.



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The WI Plan contains other recommendations that would provide protection to assist 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 $1000–2000, 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.

The WI Plan emphasizes the continuing 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 recommends reimbursement for depredation losses, citizen stakeholder involvement in the wolf management program, and coordination with the Tribes in wolf management and investigation of illegal killings.

A public harvest of gray wolves is not included in the Wisconsin Plan, and is not advocated in the most recent draft update of the Wisconsin Plan (WI DNR 1999, Wydeven 2006). The plan briefly discusses (Appendix D) the possibility of a public harvest after the Statewide (outside Indian reservations) wolf population reaches 350, but it takes no steps to begin establishing a public harvest. 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. A public harvest must be preceded by a citizen review process, including public hearings, as well as approvals by the State legislature and by the Natural Resources Board. 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.

Given the likely 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. A methodology similar to that implemented in Minnesota was tested in Wisconsin during the winter of 2003–04, but the results of the comparison were inconclusive, so wolf population monitoring methodology likely will remain unchanged.

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. Zones 1 and 2 have all the larger unfragmented areas of suitable habitat, so most of the State's wolf packs will continue to inhabit those parts of Wisconsin for the foreseeable future.

Depredation Control in Wisconsin

The rapidly expanding Wisconsin wolf population has resulted in increased depredation problems. 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, 2005a). In 2005, depredation grew to 45 cases, with 53 domestic animals killed and 11 injured. The number of farms experiencing wolf depredations on livestock grew from 8 in 2002, to 14 in 2003, to 22 in 2004, and to 25 in 2005 (Wydevin and Jurewicz, 2005).

Over the several years that lethal depredation control has been conducted in Wisconsin, there is no indication that it has adversely impacted the ability to maintain a viable wolf population in the State. As a result of depredation control actions, 17 wolves were euthanized in 2003, 24 were euthanized in 2004, and 29 (plus 6 presumed wolf-dog hybrids) were euthanized in 2005. This represents 5.1 percent, 6.4 percent, and 6.8 percent, 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.) Following this level of lethal depredation control, the WI wolf population increased 11 percent from 2003 to 2004, and 14 percent from 2004 to 2005, indicating a continuing healthy rate of population increase (Wydeven and Jurewicz 2005, Wydeven et al 2005b).

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. Attacks on other dogs occur much less frequently. 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 8 percent of the 108 packs in Wisconsin in 2004. In 2005, 17 dogs were killed and 6 injured by wolves, including 12 dogs killed and 3 injured during bear/coyote hunting and training (Wydeven pers. comm. January 22, 2006). While Wisconsin DNR compensates dog owners for mortalities and injuries to their dogs, DNR takes no action against the depredating pack. 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 2002) and provides maps and advice to hunters on the DNR web site.

Post-delisting Depredation Control in Wisconsin

Following Federal delisting, wolf depredation control in Wisconsin would be carried out according to the Wisconsin Wolf Management Plan (WI DNR 1999), Wisconsin guidelines for conducting depredation control (Wisconsin DNR 2005), and any Tribal wolf management plans or guidelines that may be developed in the future for reservations in occupied wolf range. While the Wisconsin Wolf Management Plan is currently being updated by the DNR, these updates are not expected to significantly change the State Plan, and there are no plans to change the wolf management goal of 350 wolves nor the depredation management program (Randall Jurewicz, WI DNR, pers. comm. December 5, 2005; Wydeven, pers. comm. December 6, 2005; Wydeven 2006). 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 reported incident. 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. For depredation incidents in Wisconsin Zones 1 through 3, where all wolf packs currently reside, wolves may be trapped and translocated and released at a point distant from the depredation site. As noted above, translocating depredating wolves has become increasingly difficult in Wisconsin and is likely to be used infrequently in the future. In most wolf depredation cases where technical assistance and non-lethal methods of behavior modification are judged to be ineffective, wolves will be trapped and euthanized or shot by Wildlife Services or DNR personnel.

Following Federal delisting, in certain circumstances, Wisconsin landowners will be able to obtain permits from WI DNR to kill depredating wolves. In Zones 1 and 2, where over 95 percent of wolves currently reside, these permits will be available to private landowners if their property has had a history of recurring wolf depredation problems and if the WI DNR believes that additional depredation is likely to occur. These permits will primarily be issued in response to livestock depredations, but may be infrequently issued in response to repeated instances of, or high likelihood of, depredation on confined pets. The permits will be of short duration and will place a limit on the number of wolves to be killed. Based on wolf depredation data from recent years, there currently are 10 to 12 Wisconsin farms that have such a history and would likely qualify for landowner permits to kill depredating wolves. In Zone 3 (currently has less than 5 percent of the State's wolves) and Zone 4 (currently has no wolf packs), landowners will be able to get DNR permits to kill depredating or nuisance wolves on their property if wolf depredation has been verified at the site, but there is no history of recurring

depredation incidents (WI DNR 1999, Wydeven pers. comm. 2006).

In Zones 3 and 4, following Federal delisting, proactive control (that is, removing wolves before depredation occurs) or initiating intensive control to reduce the wolf population in a limited area may be conducted by WI DNR and Wildlife Services. This would be done only in areas lacking large expanses of public land and where wolf habitat is marginal; it would occur in Zone 3 only if the wolf population is above the State management goal of 350. Proactive control may also be carried out in Zones 1 and 2, but it would not be carried out on large public land areas, and only if the wolf population exceeds 350 and the DNR determines that local population reduction is desirable. Proactive controls would be allowed in Zones 1, 2, and 3 only if the population exceeds 350 outside of Indian reservations, and such controls would cease if the population declines below 350 wolves (WI DNR 1999, Wydeven pers. comm. 2006).

In Zones 3 and 4, and in urban areas within Zones 1 and 2, local law enforcement officials may be allowed to kill wolves that appear to be losing a fear of humans, but have not exhibited a clear threat to human safety (WI DNR 1999, Wydeven pers. comm. 2006). A more flexible system such as this for controlling bold wolves in urban areas would also allow easier control of wolf-dog hybrids that frequently escape or are released to the wild (Wydeven and Wiedenhoeft 2005). These hybrids have not been as readily controlled in the past due to concerns about shooting endangered wolves.

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(o) and section 10(a)(1)(A) of the Act. Under those authorities, WI DNR and Wildlife Services trapped and euthanized 17 wolves in 2003, 24 in 2004, and 29 (including several possible hybrids) in 2005. For 2003, 2004, and 2005 this represents 5.1 percent, 6.4 percent, and 6.8 percent (including several possible wolf-dog hybrids), respectively, of the late winter population of Wisconsin wolves during the previous winter. As stated above, this level of lethal depredation control was followed by a wolf population increase of 11 percent from 2003 to 2004, and 14 percent from 2004 to 2005. (Wydeven and Jurewicz 2005, Wydeven et al 2005b). (Data from the winter survey for 2005–2006 are not yet available.) This provides strong evidence that this form of depredation control will not adversely impact the viability of the Wisconsin wolf population.

One significant change to lethal control that likely would result from Federal delisting would be 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. 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 2004–05 Wisconsin wolf population exceeded 400 animals, the death of these 5 to 30 additional wolves will not affect the viability of the population. Another significant change would be proactive trapping or intensive control in limited areas. 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 would be carried out only if the State's late-winter wolf population exceeds 350 animals.

In recent years the number of dogs attacked by gray wolves in Wisconsin has increased, with 33 dogs killed and 9 dogs injured in 2001–03. 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 Wisconsin Wolf Management Plan states that ''generally only wolves that are habitual depredators on livestock will be euthanized'' (WI DNR 1999). Furthermore, the State's guidelines for conducting depredation control actions on wolves currently listed as Federally threatened say that no control trapping will be conducted on wolves that kill ''dogs that are free-roaming or roaming at large.'' Lethal control will only be conducted on wolves that kill dogs that are ''leashed, confined, or under the owner's control on the owner's land'' (Wisconsin DNR 2005). Because of these State-imposed limitations, we do not believe that lethal control of wolves depredating on hunting dogs will 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. However, Wisconsin regulations for deer farms fencing have recently been strengthened, and it is unlikely that more than an occasional wolf will need to be killed to resolve depredation 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, Wisconsin Administrative Code 12.53)

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). Further expansion of wolves into Zone 3 would likely lead to an increase in depredation incidents and an increase in lethal control actions against wolves. These incidents, and resultant wolf mortalities, can be expected to increase at a rate that exceeds the wolf population increase. However, it is likely that these mortalities will have no impact on wolf population viability in Wisconsin because of the 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 in Zones 3 and 4.

The possibility of a public harvest of wolves is acknowledged in the Wisconsin Wolf Management Plan and in plan update drafts (WI DNR 1999, Wydeven 2006). However, the question of whether a public harvest will be initiated and the details of such a harvest are far from resolved. Establishing a public harvest would be preceded by extensive public input 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 in the foreseeable future. Based on wolf population data, the current WI Plan, and the draft updates, the Service believes that any public harvest plan would continue to maintain wolf populations well above the recovery goal of 200 wolves in late winter.

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 (Wisconsin Admin. Rules 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 Admin. Rules 12.53). In recent years depredation compensation payments have ranged from $23,000 to over $76,000.

Michigan Wolf Management Plan

The Michigan Gray Wolf Recovery and Management Plan (MI Plan) details wolf recovery and management actions needed and wolf recovery goals in the Upper Peninsula (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 protected by the National Park Service). Necessary wolf management actions detailed in the plan include public education and outreach activities, annual wolf population and health monitoring, research, depredation control, and habitat management.

As with the WI Plan, 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, the MI Plan contains a long-term minimum goal of 200 wolves on the UP (excluding Isle Royale wolves), which is the population level established in the Federal Recovery Plan for a viable isolated wolf population (USFWS 1992). We strongly support this approach, as it provides additional assurance that a viable wolf population will remain in the UP regardless of the future fate of wolves in Wisconsin or Ontario.

The MI plan identifies 800 wolves as the estimated biological carrying capacity of suitable areas on the Upper Peninsula (MI DNR 1997). (''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 MI Plan, wolves in the State would be considered recovered when a sustainable population of at least 200 wolves is maintained for 5 consecutive years. The Upper Peninsula 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 MI Plan's criteria in 2004. In Michigan, however, State delisting cannot occur until after Federal delisting. 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'' (Rebecca Humphries, MI DNR, *in litt.* 2004). Population management, except for depredation control, is not addressed in the MI Plan beyond statements that the wolf population may need to be controlled by lethal means at some future time, when the cultural carrying capacity is reached or approached.

Similar to the Wisconsin Plan, the 1997 MI Plan recommends high levels of protection for wolf den and rendezvous sites, whether on public or private land. Both State plans recommend 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).

The MI Plan calls for re-evaluation of the plan at 5-year intervals. The MI DNR initiated this 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 that revised plan to be more of a wolf management document than a recovery plan. The DNR is convening a Michigan Wolf Management Roundtable to assist in this endeavor. The Roundtable will be a diverse group of 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. The Roundtable is being asked to engage in strategic planning for long-term wolf management. This will include an evaluation of the current wolf management goal and setting priorities for management issues to be addressed by subsequent, more detailed operational planning by the DNR. The Roundtable may also provide recommendations on whom the DNR should address the priorities it identifies. The revised Michigan wolf management plan will be implemented when the species has been Federally delisted, at which time the wolf would become a protected non-game species under State law. The DNR's goal is 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'' (MI DNR 2006).

At this time, the MI DNR is developing a ''white paper'' to guide and help the Roundtable with its strategic planning by identifying specific wolf issues and providing background information and data for each issue. The Roundtable is being given a December 15, 2006, deadline to draft a strategic plan that outlines goals and policies for managing Michigan wolves. That draft will then be subject to public review and subsequent revision by the Roundtable prior to its approval and use by MI DNR to develop operational wolf management guidelines. Because the plan revision process will not be completed prior to 2007, we cannot evaluate the strategies or activities that it will contain. However, MI DNR's written commitment to ensure the continued viability of a Michigan wolf population above a level that would trigger State or Federal listing as threatened or endangered is sufficient for us to conclude that both the current MI Plan,

and a revised plan to be developed under the January 12, 2006, instructions to the Roundtable, will provide adequate regulatory mechanisms for Michigan wolves (MI DNR 1997, 2006).

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, one in 1999, three in 2001, four in 2002, and eight in 2003. Similar to Wisconsin, MI DNR has guidelines for their depredation control program. The Michigan guidelines state 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).

Depredation Control in Michigan

Data from Michigan show a similar increase in confirmed wolf depredations on livestock and dogs: 1 in 1996, 3 in 1998, 3 in 1999, 5 in 2000, 6 in 2001, 21 in 2003, and 15 in 2004 (MI DNR unpublished data). As in Wisconsin, the number of verified depredation incidents is increasing much faster than the increase in the State wolf population. The 46 depredations on livestock occurred at 34 different UP farms; nearly three-quarters of the depredations were on cattle. Of the 24 dogs killed by wolves in the last decade, half were hounds being used to hunt bear, and most of the rest were pets attacked near homes.

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 Upper Peninsula. Four, six, and two wolves, respectively, were euthanized in 2003, 2004, and 2005. This represents 1.2 percent, 1.7 percent, and 0.5 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, and 13 percent from 2004 to 2005, demonstrating that the wolf population continues to increase at a healthy rate (Huntzinger *et al.* 2005). Data from the winter survey for 2005–2006 are not yet available.

Post-Delisting Depredation Control in Michigan

Following Federal delisting, wolf depredation control in Michigan would be carried out according to the Michigan Wolf Management Plan (MI DNR 1997) and any Tribal wolf management plans that may be developed in the future for reservations in occupied wolf range. However, the current MI Plan was written well before Federal delisting was envisioned; it contains no guidance on post-delisting depredation control and it restricts control actions to trapping and translocation of problem wolves. The Michigan Wolf Management Plan is currently being updated by the MI DNR, and a revised management plan is unlikely to be completed before 2007. A series of public meetings were held to gather public input, and a Wolf Management Roundtable is being convened by MI DNR. The Roundtable will represent the full spectrum of wolf stakeholder interests and will be charged with developing recommended goals and policies for wolf management in the State following Federal delisting (MI DNR 2006). Until such time as the Roundtable recommends, and MI DNR adopts, changes to wolf depredation control measures, the following practices will be used following 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 2005). 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. 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, esp. Append. B). 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 and 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 24 translocated depredators have remained near its release site, making this a questionable method to end the depredation behaviors of these wolves (MI DNR 2005a).

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. However, based on nearly 3 years of depredation control when lethal control was used (April 1, 2003, to September 13, 2005), only 12 depredating wolves were euthanized. These deaths constituted less than 2 percent of the UP wolf population, based on previous late-winter surveys. 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). However, based on 2003–2005 depredation data, it is likely that significantly less than 10 percent lethal control will be needed in 2006, or in the next several years.

The Michigan Wolf Management Roundtable has been asked to develop goals and policies 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. The Roundtable is being asked to provide recommendations on ''the selection of intervention methods to control wolf problems'' (MI DNR 2006). While it is possible that the Roundtable may recommend management and control methods such as private landowner authority to kill wolves, preventative trapping by government trappers, and public harvest of wolves, at this time we can do no more than speculate on what will be recommended by the Roundtable and what measures might ultimately be adopted by the MI DNR. However, based on the current plan and stated goals for maintaining wolf populations at or above recovery goals, the Service believes these changes will not result in significant reductions in MI 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 (MI DNR 2006).

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 and held 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. 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, MI DNR, 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 Assurances 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. If wolves in all or part of the State are Federally delisted, North Dakota Game and Fish Department is unlikely to change the species' State classification. 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. If wolves are Federally delisted in all or part of South Dakota, they would 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; however, absent some definitive action to establish a season, wolves would remain protected. Once Federally delisted, any verified depredating wolves would likely be trapped and killed by the USDA–APHIS–Wildlife Services program (Scott Larson, USFWS, Pierre, SD, *in litt.,* 2005). Therefore, following Federal delisting, non-depredating wolves in North and South Dakota would 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 the most recent occurring in September 2003, and two more in December 2005. There have been no verified wolf depredations in South Dakota in recent decades. Upon Federal delisting it is likely 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.

Other States in the Proposed DPS

This proposed 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 (Daryl Howell, Iowa DNR, *in litt.* 2005). If the State retains this listing following Federal delisting of this proposed 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 proposed DPS, and would be part of the geographic area where wolves are 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 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 proposed DPS, and any wolves that are found in this area would not be 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 if Federal protection is removed. 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 (Scott Johnson, IN DNR, *in litt.* 2005 and 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 affect 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 if wolves were to be delisted in the future (Eli Hunt, Leech Lake Tribal Council, *in litt.* 1998; Mike Schrage, Fond du Lac Resource Management Division, *in litt.* 1998a; James Schlender, Great Lakes Indian Fish and Wildlife Commission, *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 a 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 (CORA)—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 (George Googgleye, Jr. Leech Lake Band Tribal Council Chairman, 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 (Steve Mortensen, Leech Lake Reservation, pers. comm. 2006; Peter White, Leech Lake Tribal Council, *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 (Lawrence Bedeau, DNR Director, Red Lake Band of Chippewa Indians, *in litt.* 1998). The Reservation currently has nine packs with an estimated 15–30 wolves within its boundaries (Jay Huseby, Red Lake Band of Chippewa Indians, 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) strongly opposes 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 delisting (Matt Symbal, Red Cliff Natural Resources Department, *in litt.* 2003).

The Keweenaw Bay Indian Community (Michigan) will continue to list the gray wolf as a protected animal under the Tribal Code even if it is Federally delisted, with hunting and trapping prohibited (Mike Donofrio, Keweenaw Bay Indian Community Biological Services, 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 past 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 continues to monitor another pair that has moved onto the Reservation, as well as other wolves near the reservation (Wydeven *in litt.* 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 regarding the possibility of Federal delisting resulting 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 United States.

The Great Lakes Indian Fish and Wildlife Commission (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'' (Andrew Edwards, 1854 Authority Biological Services, *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'' (Sonny Myers, Executive Director, 1854 Authority, *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, Ottawa, and Hiawatha 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 (USFWS 1992). 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 (Randy Moore, Regional Forester, U.S. Forest Service, *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. On the Chequamegon-Nicolet National Forest, the standards and guidelines specifically include the protection of den sites and key rendezvous sites, in agreement with the WI Wolf Recovery Plan. 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, so wolf depredation and lethal control of wolves is not likely to be a frequent occurrence, nor constitute a significant mortality factor, for the national forest wolf populations. 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 (Ed Lindquist, Superior NF, *in litt.* 11/18/05; Alan Williamson, Chippewa NF, *in litt.* 11/17/05; Kirk Piehler, Hiawatha NF, *in litt.* 11/23/05; Robert Evans, Ottawa NF, *in litt.* 11/21/05). 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. Generally, 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 would 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 more protective of wildlife than are State plans and regulations. In the case of the gray wolf, the NPS Organic Act and NPS policies will continue to provide protection even after Federal delisting has occurred.

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 will continue to be prohibited on park lands, regardless of what may be allowed beyond park boundaries (Barbara West, National Park Service, *in litt.* 2004). A radiotelemetry 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), whereas all mortality outside the park was human-induced (e.g., shooting and trapping) (Gogan *et al.* 1997). 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 Recovery of the Gray Wolf in the Western Great Lakes). 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; it is not considered to be significant to the recovery or long-term viability of the gray wolf (USFWS 1992).

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 MI Plan recommends (Karen Gustin, Pictured Rocks National Lakeshore, *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 would continue to be prohibited. 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 (Robin Maercklein, National Park Service, *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, the installation had one pack with two adults. 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 (Danny Nobles, Department of the Army, *in litt.* 2004).

The protection afforded to resident and transient wolves, their den and rendezvous sites, and their prey by five national forests, four National Parks, 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. However, because these additional lands will only afford small islands of protection, suitable habitat, and adequate wild prey, they will not contribute significantly to maintaining a viable wolf population in the WGL DPS.

In summary, following Federal delisting of gray wolves in the WGL DPS, 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 approach nonviable levels in the foreseeable future. Furthermore, current work on updating and revising the Wisconsin and Michigan plans, respectively, is being conducted in a manner that will not reduce the States' commitments to maintain viable wolf populations after 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.

If delisted, most 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, during that delisting process, 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'' (Rebecca Humphries, MI DNR, *in litt.* 2004). Following State delisting in Wisconsin, the wolf will be classified as a ''protected wild animal,'' with 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 not sooner than 5 years after Federal delisting (MN DNR 2001). 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).

Other States within 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 Federal delisting of the DPS, in order to deal with wolf-livestock conflicts in areas where wolf protection is no longer imposed by the Act. Aside from this change, wolves are likely to remain otherwise protected by various State designations in these portions of the proposed DPS for the immediate future, except for the very small portions of Indiana and Ohio within the DPS. Because none of these States has sufficient habitat within the DPS boundary to restore wolves, it is possible that most, or all, of these six States will eventually reduce or eliminate protections for gray wolves in the Federally delisted area. However, because these States constitute only about one-third of the land area within the proposed DPS, and contain virtually no suitable habitat of sufficient size to host viable gray wolf populations within the DPS, it is clear that even complete protection for gray wolves in these areas would not provide any 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 would be manifest, will not significantly 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, 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, 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.

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 proposal, 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 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 Great Lakes Indian Fish and Wildlife Commission (GLIFWC), have indicated that following delisting there is likely to be some interest in the taking of small numbers of wolves for traditional ceremonies (George King, Red Lake Band of Chippewa Indians, *in litt.* 2003; Peter White, Leech Lake Band of Ojibwe, *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. Native American taking of wolves from ceded lands would only be done as part of a harvestable surplus of wolves that is established by the States in coordination with the Tribes. 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.

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.

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 perceived danger the species may pose to humans, its symbolic representation of wilderness, the economic effect of livestock losses, the emotions regarding the threat to pets, the conviction that the species should never be 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, 1990, 1999), 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, MN DNR 1998, WI DNR 1999). In Michigan, a public attitude survey was conducted in 2002, to identify attitude changes that had occurred between the time there were only about 10 wolves in the UP to the current wolf population of about 278 on the UP. This survey suggested that the majority of Michigan residents still support wolf recovery efforts. However, Upper Peninsula residents' support for wolf recovery has declined substantially since the 1990 Kellert survey (Mertig 2004). 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).

It is unclear whether increased flexibility of depredation control after delisting would affect public attitudes towards wolves (i.e., decrease opposition to the local presence of wolves), due to the strong influence of other factors. A survey of 535 rural Wisconsin residents, for example, found that attitudes towards wolves were largely dependent on social group, and persons who were compensated for losses to wolves were not more tolerant of wolf presence than those who were refused compensation for reported losses (Naughton-Treves et al. 2003). Although social group was the overriding factor in determining tolerance for wolves, previous history with depredation also negatively affected tolerance; persons who had lost an animal to a wolf or other predator were less tolerant of wolves (Naughton-Treves et al. 2003). However, the survey did not directly address the question of whether control of problem wolves affected or changed individual attitudes toward wolves or local wolf presence. In an analysis of data collected in 37 surveys of public attitudes toward wolves on three continents, Williams et al. (2002) found that hunters and trappers had significantly more positive attitudes towards wolves than farmers and ranchers. In Wisconsin, however, where bear hunters have lost hounds to wolves, they were clearly less tolerant of wolves than livestock producers (Naughton-Treves et al. 2003). In addition to social group and previous losses of animals to wolves or other predators, education level, gender, age, rural residence, and income have all been found to influence attitudes towards wolves (Williams et al. 2002). Williams et al. (2002) also suggests that attitudes of individuals may not be changing, but the attitudes of various segments of society may change as their older cohorts are replaced by others whose attitudes were created during a time when public attitudes were generally more positive toward wolves.

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). 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, WI DNR 1999). 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.

Summary of Our Five-Factor Analysis of Potential Threats

As required by the ESA, we considered the five potential threat factors to assess whether wolves are threatened or endangered throughout all or a significant portion of their range in the WGL DPS and therefore, whether the WGL DPS should be listed as threatened or endangered. In regard to the WGL DPS, a significant portion of the wolf's range is an area that is important or necessary for maintaining a viable, self-sustaining, and evolving representative meta-population in order for the WGL DPS to persist for the foreseeable future. While wolves historically occurred over most of the proposed DPS, large portions of this area are no longer able to support viable wolf populations, 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 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 have been historic habitat, many of these areas are no longer suitable and are not important or necessary for maintaining a viable, self-sustaining, and evolving representative wolf population in the WGL DPS into the foreseeable future, and are not a significant portion 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.

The number of wolves in the WGL DPS greatly exceeds the recovery criteria (USFWS 1992) for (1) a secure wolf population in Minnesota, and (2) a second population of 100 wolves for 5 successive years. Thus, based on the criteria set by the Eastern Wolf Recovery Team in 1992, 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 genetic diversity that remained in the WGL DPS when its wolves were first protected in 1974. Furthermore, the Wisconsin-Michigan wolf population has even achieved the numerical recovery criteria for an isolated population. Therefore, even if this two-State population was to become totally isolated and wolf immigration from Minnesota or Ontario ceased, it would still remain a viable population for the foreseeable future. Finally, the wolf populations in Wisconsin and Michigan each have separately exceeded 200 animals for 7 and 6 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 200 wolves or above. The wolf's numeric and distributional recovery in the WGL DPS clearly has been achieved and greatly exceeded. The wolf's recovery in numbers and distribution in the WGL DPS, together with the status of the threats that remain to, and are likely to be experienced by, the wolf within the DPS, indicates that the gray wolf is not likely to be in danger of extinction, nor likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range within the DPS.

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 Zone 1, and across the Upper Peninsula of Michigan—would 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 would be more substantial, and may preclude the establishment of wolf packs in most or all of these areas. Similarly, the lack of sufficient areas of suitable habitat and weaker post-delisting protections 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, wolf numbers in these areas will have no impact on the continued viability of the recovered wolf metapopulation in Minnesota Zone A, Wisconsin Zone 1, and the Upper Peninsula of Michigan. Reasonably foreseeable threats to wolves in all parts of the WGL DPS are not likely to threaten wolf population viability in Minnesota, Wisconsin, or the Upper Peninsula of Michigan for 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; overutilization by humans; disease, parasites, or predatory actions by other animals or humans; inadequate 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. 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 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).

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

Effects of the Rule

If finalized, this rule would remove the protections of the Act from the WGL DPS. The protections of the Act would still continue to apply to the gray wolves outside the WGL DPS, where appropriate.

This proposal, if finalized, would remove 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 km^2 (9,845 mi^2) in northeastern and northcentral Minnesota. This proposed rule, if finalized, would remove 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 (*Canis rufus*) or change the regulations for the three non-essential experimental populations. It is important to note that the 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 DNR's in recent years. These States comprise the core recovery areas within the DPS and were the only States with numerical recovery criteria in the Recovery Plan (USFWS 1992). These activities will include both population monitoring and health monitoring of individual wolves. During the PDM period, the Service and the Recovery Team annually 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 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 significant 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. Changes to the monitoring methods, for example, might include increased emphasis on a potentially important threat or a particular geographic area. At the end of the monitoring period, we will decide if relisting, continued monitoring, or ending monitoring is appropriate. If data show a significant population decline or increased threats, but not to the level that relisting is warranted, we will consider continuing monitoring beyond the specified period and may modify the monitoring program based on an evaluation of the results of the initial monitoring.

We anticipate that this Service monitoring program will extend for 5 years beyond the 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, that review will determine whether the PDM program should be terminated or extended.

Public Comments Solicited

We intend that any final action resulting from this proposal will be as accurate and as effective as possible. Therefore, comments, new information, or suggestions from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party concerning this proposed rule are hereby solicited. Comments particularly are sought concerning:

(1) Biological, commercial trade, or other relevant data concerning any current or likely future threat, or lack thereof, to gray wolves in the WGL DPS;

(2) Additional information concerning the range, distribution, population size, population trends, and threats with respect to gray wolves in the WGL DPS;

(3) Current or planned activities in the WGL DPS and their possible impacts on the gray wolf and its habitat;

(4) Information concerning the adequacy of the recovery criteria described in the 1992 Recovery Plan for the Eastern Timber Wolf;

(5) The extent and adequacy of Federal, State, and Tribal protection and management that would be provided to the gray wolf in the WGL DPS as a delisted species; and

(6) The proposed geographic boundaries of the WGL DPS, and scientific and legal supporting information for alternative boundaries that might result in a larger or smaller DPS, and including information on the discreteness and significance of the proposed and alternative DPS.

If you wish to comment, you may submit your comments and materials concerning this proposal by any one of several methods (see **ADDRESSES** section). Please submit Internet e-mail comments without any form or encryption and avoid the use of special characters. Please include ''WGL Gray Wolf Delisting; RIN 1018–AU54'' in your e-mail subject header and your name and return address in the body of your message. Note that the Internet e-mail address for submitting comments will be closed at the termination of the public comment period.

Our practice is to make comments, including names and home addresses of respondents, available for public review. Individual respondents may request that we withhold their home addresses from the rulemaking record, which we will honor to the extent allowable by law. There also may be circumstances in which we may withhold from the rulemaking record a respondent's identity, as allowable by law. If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment. We will not consider anonymous comments, however. We will make all submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, available

for public inspection in their entirety. We anticipate a large public response to this proposed rule. After the comment period closes, we will organize the comments and materials received and make them available for public inspection, by appointment, during normal business hours at the following Ecological Services offices:

- Twin Cities, Minnesota Ecological Services Field Office, 4101 E. 80th Street, Bloomington, MN; 612–725–3548
- Green Bay, Wisconsin Ecological Services Field Office, 2661 Scott Tower Dr., New Franken, WI; 920–866–1717
- East Lansing, Michigan Ecological Services Field Office, 2651 Coolidge Road, Suite 101, East Lansing, MI; 517–351–2555

We will consider all comments and information received during the comment period on this proposed rule during preparation of a final rulemaking. Accordingly, the final decision may differ from this proposal.

Public Hearings

The ESA provides for public hearings on this proposed rule. We have scheduled four public hearings on this proposed rule as specified above in **DATES** and **ADDRESSES.**

Public hearings are designed to gather relevant information that the public may have that we should consider in our rulemaking. Before each hearing, we will hold an informational meeting to present information about the proposed action. During the hearing, we invite the public to submit information and comments. Interested persons may also submit information and comments in writing during the open public comment period. We encourage persons wishing to comment at the hearing to provide a written copy of their statement at the start of the hearing. Public hearings will allow all interested parties to submit comments on the proposed rule for the gray wolf.

Peer Review

In accordance with the December 16, 2004, Office of Management and Budget's ''Final Information Quality Bulletin for Peer Review,'' we will obtain comments from at least three independent scientific reviewers regarding the scientific data and interpretations contained in this proposed rule. The purpose of such review is to ensure that our delisting proposal provides to the public, and our delisting decision is based on, scientifically sound data, assumptions, and analyses. We have posted our proposed peer review plan on our web site at *http://www.fws.gov/midwest/Science/*. Public comments on our peer review were obtained through March 11, 2006, after which we finalized our peer review plan and selected peer reviewers. We will provide those reviewers with copies of this proposal as well as the data used in the proposal. Peer reviewer comments that are received during the public comment period will be considered as we make our final decision on this proposal, and substantive peer reviewer comments will be specifically discussed in the final rule.

Required Determinations

Clarity of the Rule

Executive Order 12866 requires agencies to write regulations that are easy to understand. We invite your comments on how to make this proposal easier to understand including answers to questions such as the following: (1) Is the discussion in the **SUPPLEMENTARY INFORMATION** section of the preamble helpful to your understanding of the proposal? (2) Does the proposal contain technical language or jargon that interferes with its clarity? (3) Does the format of the proposal (groupings and order of sections, use of headings, paragraphing, etc.) aid or reduce its clarity? What else could we do to make the proposal easier to understand? Send a copy of any comments on how we could make this rule easier to understand to: Office of Regulatory Affairs, Department of the Interior, Room 7229, 1849 C. Street, NW., Washington, DC 20240. You may also e-mail the comments to this address: *Exsec@ios.doi.gov.*

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 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 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 proposed 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 are coordinating this proposed rule with the affected Tribes. Throughout several years of development of earlier related rules and this 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 will conduct additional consultations with Native American tribes and multitribal organizations subsequent to this publication. We will fully consider all of their comments on this proposal submitted during the public comment period and will attempt to address those concerns to the extent allowed by the Act, the Administrative Procedure Act, and other applicable Federal statutes.

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 rule is Ronald L. Refsnider, U.S. Fish and Wildlife Service, Ft. Snelling, Minnesota, Regional Office (see **FOR FURTHER INFORMATION CONTACT** section above).

List of Subjects in 50 CFR Part 17

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

Proposed Regulation Promulgation

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

PART 17—[AMENDED]

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

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

2. 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, and (2) Minnesota, Wisconsin, Michigan, eastern North Dakota (that portion north and east of the Missouri River upstream to Lake Sakakawea and east 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 Interstate Highway 80), and northwestern Ohio (that portion north of Interstate Highway 80 and west of the Maumee River at Toledo); Mexico.	E	1, 6, 13, 15, 35, 561, 562, 631, 745	NA	N/A.
Do	do	do	U.S.A. (WY and portions of ID and MT—see 17.84(i) and (n).	XN	561, 562, 745	NA	17.84(i). 17.84(n).
Do	do	do	U.S.A. (portions of AZ, NM, and TX—see 17.84(k))..	XN	631	N/A	17.84(k).
*	*	*	*	*	*	*	

* * * * *

§ 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 1, 2006.

H. Dale Hall,

Director, U.S. Fish and Wildlife Service.

[FR Doc. 06–2802 Filed 3–24–06; 8:45 am]

BILLING CODE 4310–55–P