

Northern Rocky Mountain Wolf

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Common Name: gray wolf

Scientific Name: *Canis lupus nubilus*

Order: Carnivora

Family: Canidae

Status: Endangered under the Endangered Species Act of the United States—except in Minnesota, Michigan, and Wisconsin where it is listed as Threatened, and in Wyoming and portions of Montana and Idaho where reintroduced populations are listed as Experimental-Nonessential; the species is not listed in Alaska.

Threats: Persecution by humans owing to livestock depredation; competition for ungulates; a misunderstanding of wolf and its ecological role.

Habitat: Wherever there are large ungulates.

Distribution: Reintroduction sites in Idaho and the Greater Yellowstone Area have approximately 220 wolves; a naturally recolonizing population in northwestern Montana numbers between 50 and 70; Minnesota has about 2,000 wolves; and Michigan and Wisconsin support roughly 100 wolves each. There are reports of wolves in North Dakota and Maine, but no verified populations. Wolves are common throughout Canada and Alaska.

DESCRIPTION

Gray wolves, described by Mech (1970), are the largest member of the dog family (Canidae). Adult males weigh from 30 to 60 kg and females from 25 to 50 kg. Long-legged with oversized feet, the wolf is difficult to confuse with the much smaller but similar looking coyote. Wolves are typically gray but can be black or white. The dental formula is 3/3 incisors, 1/1 canines, 4/4 premolars, and 2/3 molars.

NATURAL HISTORY

Wolves are obligate carnivores (i.e., they can only eat meat), that rely almost exclusively on ungulates (Mech 1970). Once considered a wilderness species (Theberge 1975), wolves are now known to exist wherever there are adequate prey and human tolerance.

Wolves breed in February through March, depending on latitude (Mech 1970). Gestation is approximately 63 days (Mech 1970). Females remain

receptive for 65 days if not bred. Young are born in a den that can be a hole in the ground, an excavation under a rock, a log, an old beaver lodge, or a cave. Wolf pups have also been born above ground (Phillips & Smith 1996). Litters average five pups, which are helpless at birth. Pups emerge from the den at 10 to 15 days of age and are weaned in 6 to 8 weeks (Mech 1970).

Wolves live in family groups known as packs that form because of delayed dispersal. Young may disperse as early as 10 months or delay dispersal for years, but most leave their natal pack by 3 years of age (Gese & Mech 1991). Variable dispersal ages make most packs multigenerational.

Wolves are territorial, marking and defending their areas of use from other wolves. Territories are large, ranging from 10,000 hectares to over 250,000 hectares depending on prey availability. Changes in prey density are related to expansion or contraction of territory—and therefore population density of wolves. Prey availability may be directly linked to wolf mortality, either through starvation or through intraspecific strife (i.e., fights between individuals of the same species).

Wolves are usually monogamous but will re-pair if a mate dies. It was once believed that all breeding was done by the dominant male and female in a pack (i.e., alphas). Although this tendency is the norm, recent research has shown that more than one female breeding in a pack is not as uncommon as once thought (Mech et al. 1998). The number of females in a pack that breed is probably related to pack size, social relations within the pack, and availability of food.

CONFLICTING ISSUES

Young and Goldman (1944), Lopez (1978), and McIntyre (1995) best described the decline of wolves across North America and Eurasia. Wolf eradication was conducted with an almost religious fervor, and sometimes horrific methods (e.g., setting wolves on fire, cutting off their lower jaws and releasing them, etc.), were used (Lopez 1978; McIntyre 1995).

A change in values in the 1960s brought a greater awareness of predators and of ecosystems (Mowat 1963). Watershed studies revealed important aspects of wolf ecology (Murie 1944), which prompted biologists to question long-held beliefs about predators and the need for wolf control (Erington 1946). During the last three decades wolf ecology has been exhaustively researched, and there is now a better understanding of the topic (Allen 1979; Carbyn et al. 1995; Peterson 1995; Mech et al. 1998).

This understanding, however, has not simplified wolf recovery, which is an important issue because the species' current distribution is much reduced. During the last two decades significant effort has been expended to recover wolf populations to appropriate habitats under the authority of the Endangered Species Act (U.S. Fish and Wildlife Service 1994; Bangs & Fritts

1996; Fritts et al. 1997). Indeed, for many conservationists wolf recovery has become an important benchmark for measuring the U.S. commitment to conserving imperiled species.

Two issues are largely responsible for the contentious nature of wolf recovery: livestock depredations, and competition with humans for wild ungulates. Wolf control (i.e., the purposeful reduction of wolf populations) has been the most frequently applied solution for both issues. However, because of a sympathetic public that often opposed control, strong-minded farmers and ranchers who often supported control, and intense debate among scientists about the efficacy and need (because other factors may contribute to prey declines) for wolf control, the practice has been hounded by controversy (Gasaway et al. 1983; Mech 1995; Haber 1996; National Research Council 1997).

Depredation of livestock may be the single most significant issue related to wolf recovery, because it was the impetus behind the original eradication of wolves. Historically in North America, wolf-induced livestock losses were much greater than current losses (Lopez 1978). As North America was settled by Europeans, a significant reduction in most populations of native ungulates occurred, leaving wolves with an increased need to kill livestock (Lopez 1978). In recent times, active wildlife conservation programs (U.S. Fish and Wildlife Service 1987) facilitated the recovery of native ungulate populations, leading to a reduction in depredations. Wolves in Minnesota and Alberta live near farming and ranching operations, yet few wolves there actually kill livestock (Gunson 1983). Wolves are now settling areas in Minnesota that support numerous people and domestic animals, yet depredations have not increased proportionally.

Although several methods have been developed to minimize or prevent depredations, few have proven successful. Guard dogs have been used widely, but with marginal results (Coppinger & Coppinger 1995). Generally one guard dog is not sufficient, as several dogs seem necessary to deter a wolf attack (Coppinger & Coppinger 1995). Another approach requires farmers and ranchers to intensify husbandry of livestock (e.g., confine sheep to structures overnight, develop calving areas near ranch headquarters, or monitor open range stock daily). Ultimately, killing the wolf or wolves responsible for the depredation is often the only long-term solution (Mech 1995).

Depredation of livestock was a major concern for ranchers in the northern Rocky Mountains, where the U.S. Fish and Wildlife Service (USFWS) is actively promoting recovery of gray wolves. In response, the USFWS developed management protocols that rely on lethal control after a wolf has been involved in two depredation events (U.S. Fish and Wildlife Service 1994). This "two strike" rule will likely be in effect only while the wolf population is small. Once recovery has been achieved (i.e., when ten breeding packs have each produced offspring for three successive years in each of

three areas: northwestern Montana, central Idaho, and the Greater Yellowstone Area), then the gray wolf in the northern Rocky Mountains will be removed from the list of endangered species and managed as resident wildlife by the states of Montana, Wyoming, and Idaho (Bangs & Fritts 1996). It is likely that these states will adopt liberal protocols for managing wolves, including recreational harvest and lethal control whenever wolves are near livestock.

Wolf conservation is also contentious because the species' reliance on native ungulates often conflicts with human use (National Research Council 1997). In vast areas of Canada and Alaska, thousands of wolves have been purposefully killed because of concern over the ability of local ungulate populations to support both wolf predation and human harvest (Gasaway et al. 1983; Haber 1996). Many individuals believe that every wild ungulate a wolf kills is one less for the human hunter (Lopez 1978).

There is much disagreement among wildlife conservationists over the need to control wolves to promote the growth of ungulate populations (Bergerud et al. 1988; Thompson & Peterson 1988). It is unclear if wolf predation adds to the overall mortality burden placed on ungulate populations or is simply compensatory (i.e., that wolves prey mostly on animals that would have died at about the same time owing to some other cause) (Gasaway et al. 1983). Additionally, even if wolf predation restricts ungulate population growth, there is reason to question the efficacy of wolf control as a cost-effective wildlife management tool. A recent review of wolf management in Alaska concluded that there was no long-term evidence to support wolf control to increase prey populations, and it stated that of 11 studies examined, limited data and experimental design flaws made conclusions tenuous (National Research Council 1997). The report did acknowledge short-term increases in moose and caribou numbers for hunters when a large percentage of the wolves in an area were killed. Accordingly, the debate over killing wolves for purposes of enhancing hunting opportunities for humans rages as strong as ever throughout Alaska and Canada (Bergerud et al. 1988; Thompson & Peterson 1988; Haber 1996).

FUTURE AND PROGNOSIS

Despite intense controversy, wolf conservation has been successful. Widespread lethal control of wolves is no longer practiced without biological justification and social input. And nonlethal methods of controlling the size and distribution of wolf populations are being sought. As a result, there are more wolves in North America today than there were 30 years ago. In Montana, Minnesota, Michigan, and Wisconsin wolves have naturally reclaimed significant portions of their historic ranges. Re-introductions to central Idaho and the Greater Yellowstone Area have been successful beyond expectations and have prompted discussions about initiating such projects in

Adirondack State Park in New York, in northern Maine, and in Olympic National Park in Washington. Controversy will be lessened and success maximized if wolf recovery focuses on large wildland areas with low human population density (Smith et al. 1999). Also, wolf recovery will be most successful if public education about management issues is emphasized so that a significant proportion of the public supports recovery while tolerating some form of control. It is important that public education programs include the message that widespread recovery of wolves will ultimately result in a need to control them (Fritts et al. 1995; Mech 1995).