

WOLVES

in the

NORTHEAST

*Principles, Problems,
and Prospects*



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NORTHEAST

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by Peggy Struhsacker
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INTRODUCTION



No other North American mammal inspires such a wide range of human emotions as the gray wolf (*Canis lupus*). Feared and admired, cursed and revered, wolves are the stuff of legends and a symbol of America's vanishing wilderness. Their reputation is larger than life; their role in the restoration of America's wildlife heritage is bigger still. The passionate

positive and negative responses that wolves inspire in people have left the issue of their restoration in remaining suitable habitat throughout their historic range both contentious and undecided, but also full of promise.

Wolves have been present in North America for tens of thousands of years, co-evolving with the muskox, bison, elk, and moose. After the decimation of natural prey herds during the 19th century, wolf populations nose-dived. This situation worsened when wolves turned to livestock to replace their native prey. Resulting conflicts with humans led to the elimination of wolves from the forests of northern Maine, New Hampshire, and Vermont by the mid 1800's.

Fortunately, education and common sense management has helped to erase many of the myths and misconceptions that turned wolves into perceived public enemies. After years of exhaustive efforts by the National Wildlife Federation and other conservation groups, most people have a better understanding of the key role that wolves play in ecosystems.

Today, the gray wolf is making a comeback in the Great Lakes region and the Northern Rockies and the Southwest. The National Wildlife Federation and the Coalition to Restore the Eastern Timber Wolf are working toward the goal of recovering wolves in suitable habitats in the forests of the Northeast. Unfortunately, a rule proposed by the federal government in 2003 severely undermines the possibility of wolf recovery in this region.

This booklet was prepared to provide information and to encourage discussion on the issues that surround wolf restoration in the Northern Forest. This booklet is focused on the scientific and social implications of large predator recovery and recognizes that there are definite wildlife management issues that warrant continued discussion. Hopefully, this booklet will contribute to the knowledge and understanding necessary for an informed discussion that is critical to any successful wildlife recovery effort.

Mark Van Putten

President and CEO
National Wildlife Federation

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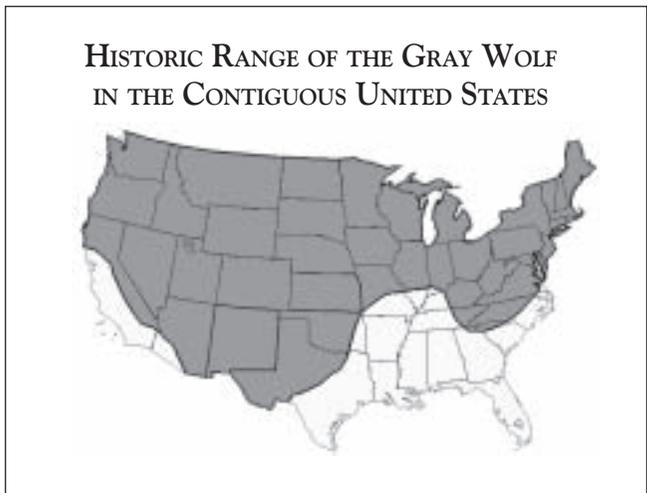
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STATUS OF WOLVES IN THE UNITED STATES

Where Are The Wolves?

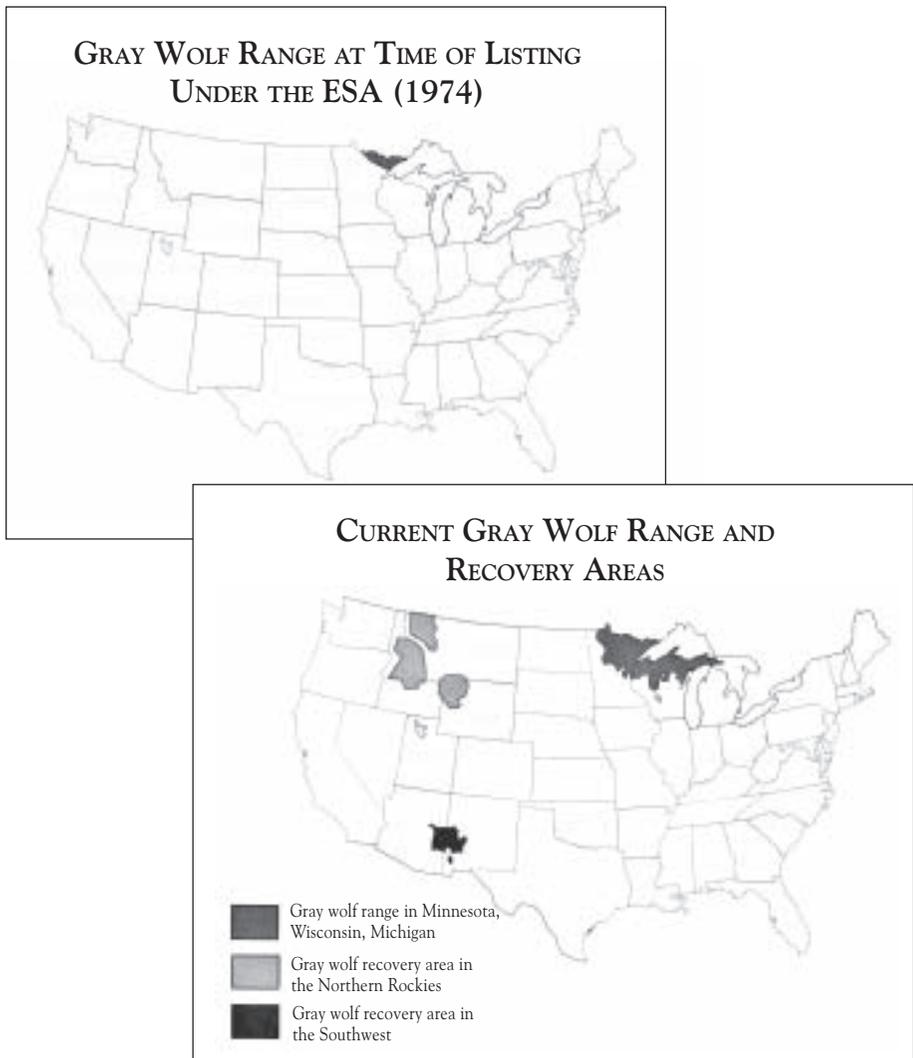
Wolves once ranged from coast to coast in the United States – and from the Arctic tundra to southern Mexico. (The closely related red wolf – *Canis rufus* – occurred in the Southeast, from central Texas to Florida and north to Chesapeake Bay and perhaps well beyond.) Wolves inhabited almost every conceivable habitat, including grasslands, desert shrublands, forests, and tundra – where they co-evolved with native ungulates. With the demise of woodland caribou and some populations of bison, elk, moose and deer, the fortunes of the gray wolf waned.

By the mid 1800's, most wolves had been exterminated in the eastern states. Bounties for wolves, beginning with Massachusetts in 1630, had done their job. Historian Edward Curnow estimated that “wolfers” in Montana killed 100,000 wolves annually in the territory during the 1870 to 1877 period. Wolf sightings were reported on a regular basis in the Northern Rockies and a few wolves were killed into the early 1900s. Most of these were thought to be young wolves from Canadian populations that were searching for territory and mates, or perhaps wolves that had escaped from captivity. By the 1930s, virtually no wolves remained in the lower 48 states outside of Minnesota because they had been systematically poisoned and trapped by ranchers, farmers, and government agents. Wolves received legal protection with the passage of the Endangered Species Act (ESA) in 1973.



By the mid 1980s wolves were well established in Minnesota and migrating naturally to Wisconsin and the Upper Peninsula of Michigan. In the early 1980s, things began to turn around in the Northern Rockies, when a pack of wolves began hunting in the northwestern part of Glacier National Park in Montana. In 1986, wolves denned in the park, the first documented wolf den in the U.S. Rockies in 50 years.

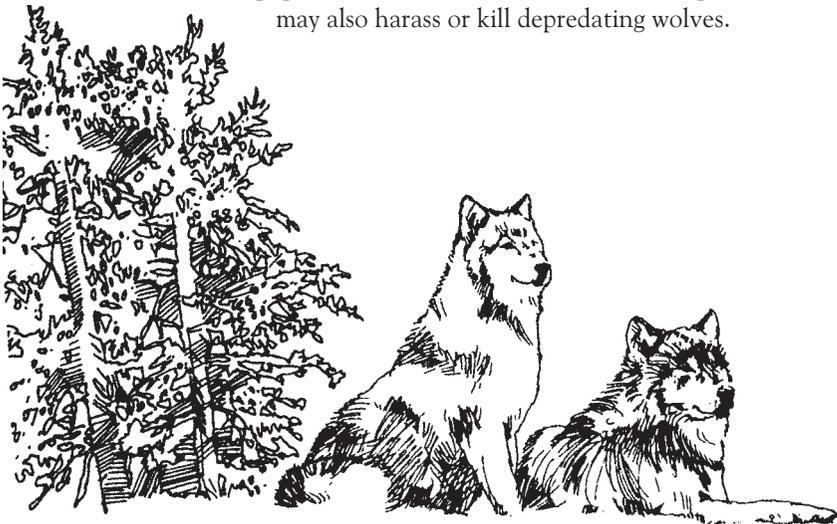
With the successful recovery of wolves in the Great Lake States, an active wolf restoration program began in January of 1995 in Yellowstone Park and Central Idaho, with the relocation of 29 wolves from Canada. A second relocation of 37 wolves occurred in 1996. Because of abundant prey and few conflicts with humans, both of these restored populations have expanded rapidly. Today, more than 2,500 wolves reside in Minnesota with estimates of 500 wolves in Wisconsin and Michigan. The western states similarly have a population of over 500 wolves, but none occur in the Northeast.



Currently, the gray wolf is listed under the Endangered Species Act (ESA) as a threatened species throughout the United States, except Alaska. The Mexican gray wolf (*Canis lupus baileyi*) is listed as endangered. In Alaska, wolf populations are found throughout the state and federal protection is unnecessary. In Canada, wolves are numerous and distributed throughout much of their historic range.

The ESA defines a species as “endangered” if it is in danger of extinction throughout all or a significant portion of its range. A “threatened” species is defined as one that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Congress provides federal funding and the ESA provides protection so that listed species can be recovered to the point where they can be taken off the list. However, such funding has been inadequate to address fully the many species that have been listed.

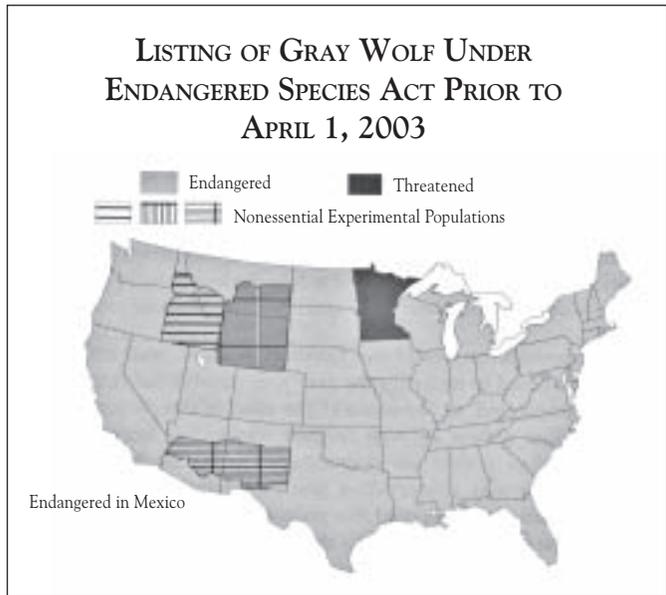
Under the law, it is illegal to kill or harass endangered species, except under certain circumstances. Rules for threatened species can be less restrictive. Even more flexible is the special classification that governs wolf management for the restored populations in Idaho and Yellowstone. Because Congress wanted to promote “introduction” as a recovery tool, the ESA allows “introduced” populations to be designated as “experimental, non-essential” with a customized set of management regulations. (“Introduction” is a term used in the ESA, and “reintroduction” is a term used commonly for one step in the process of restoring native wildlife populations. Elsewhere in this document the term “restoration” is used to describe more accurately the goal of a recovery effort.) Because wolves are abundant in some parts of their range, in the U.S. and elsewhere, the Yellowstone and central Idaho populations were given this more flexible “experimental, non-essential” designation. As a result, federal agencies like the Forest Service need not consult with the U.S. Fish and Wildlife Service (FWS) for proposed actions that may affect the experimental wolf population, as they normally would for a threatened or endangered species. Also, state, federal, and tribal authorities are permitted to move or kill wolves that prey on domestic animals or prey excessively on big-game populations. Under some circumstances, private individuals may also harass or kill depredating wolves.



Setting Recovery Goals

Just as separate wolf populations may have different classifications under the ESA, they may also require different recovery strategies. Minnesota and the Northern Rockies, for example, are governed by separate wolf recovery plans. The same wolf species inhabits both regions, but the ESA allows recovery actions to be governed through the establishment of “distinct population segments” (DPS). In other words, recovery criteria can differ according to conditions in different geographic areas.

The Eastern Timber Wolf Recovery Plan, in which the Northeast states are included, calls for “delisting” the wolf (removing it from the federal list of endangered and threatened species) when: 1) the survival of the wolf in Minnesota is assured, and 2) that at least one “viable” wolf population is reestablished within the historical range of the eastern timber wolf outside of Minnesota and Isle Royale. The Eastern Plan does not specify where in the eastern United States the second population should be reestablished. Recently, the FWS Eastern Timber Wolf Recovery Team clarified the delisting criterion, which treats wolves in Wisconsin and Michigan as a single population.



A number of biologists would argue that Wisconsin and Michigan do not constitute a separate population from Minnesota.

The Northern Rocky Mountain Wolf Recovery Plan calls for “delisting” the wolf when ten breeding pairs exist for three successive years in each of the three recovery areas: Yellowstone, Central Idaho, and Northwestern Montana. Biologists believe that ten breeding pairs represent the minimum number of wolves necessary to maintain a population in a given area. A population must be large enough to sustain minimal numbers of animals through disease episodes and other adverse periods. The Northern Rockies plan also specifies three recovery areas in order to prevent short-term genetic problems. Since the plan was adopted in 1987, however, biologists have come to recognize the importance of establishing larger, connected, populations. Many biologists today would argue that a single population of at least 30 pairs makes better biological sense than three smaller populations.

Northeast on Hold

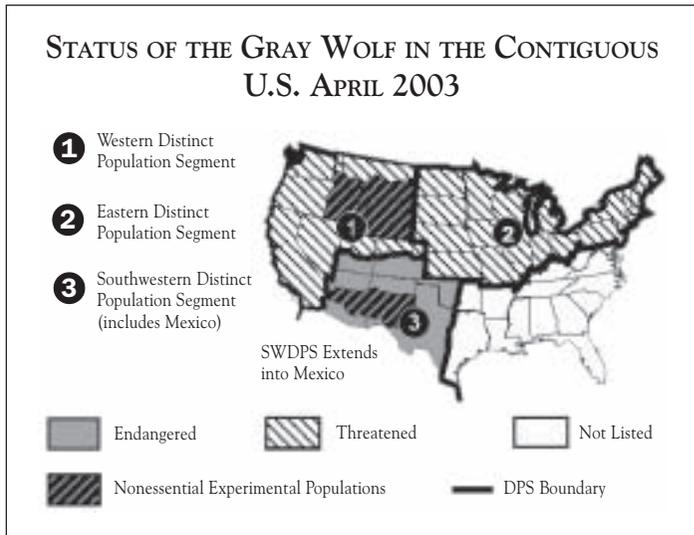
The National Wolf Rule, announced in mid-March 2003, undermines the progress in states where wolf recovery is well underway and precludes future federal wolf recovery efforts in regions such as the Northeast and other parts of the country where suitable wolf habitat exists. Under this rule and due to the apparent success of the Great Lakes and Northern Rockies' wolf efforts, the FWS chose to reclassify the gray wolf across the lower 48 states to "threatened" and removed all protection under the Endangered Species Act in those states not deemed suitable for wolves in the future. The rule continued to list the Southwestern Distinct Population Segment as endangered. (Refer to map.)

Many individuals and conservation groups (including the National Wildlife Federation)

oppose this rule, insisting that wolves should be restored to the Northeast as a separate population from the Great Lakes, in recognition of the gray wolf's historic range in North America. However, reclassifying the wolf population from "endangered" down to "threatened"

does not by itself

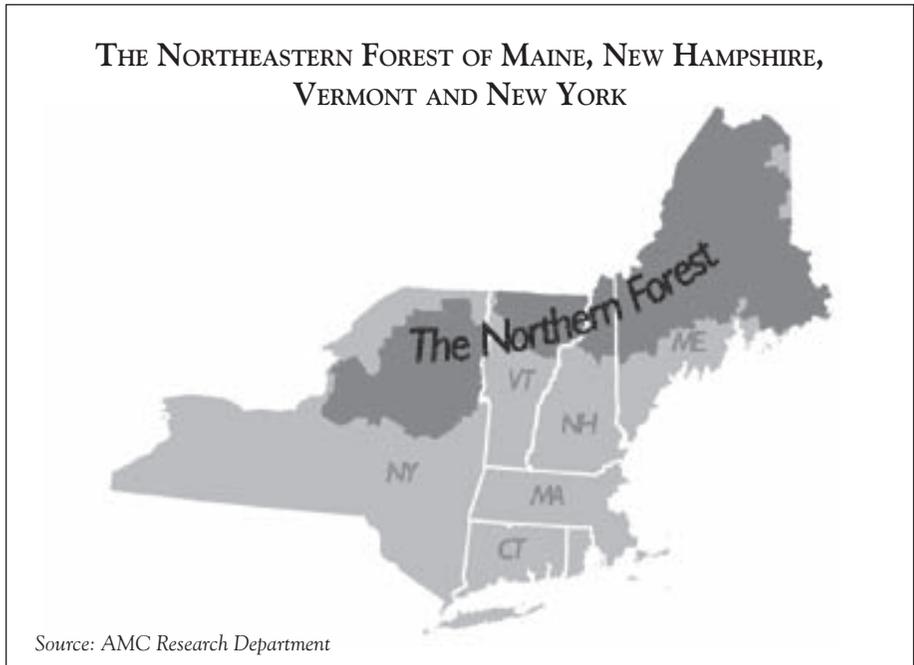
prevent restoration in the Northeast, which could take the form of a State or Federal recovery plan despite the changed status. A delisting, however, of the gray wolf off the Endangered Species list would be detrimental for any wolf naturally dispersing from Quebec to the U.S. There would be no federal protection for the wolf after delisting in the Northeast states. The states of Vermont, New Hampshire and Maine currently do not list the gray wolf on their state endangered species lists, therefore, offer no form of protection for the species other than "no open season" in regards to hunting. NWF is currently working with these states to list the gray wolf on their Endangered Species lists. Even if the states list the wolf, however, current state penalties do not have the power of the Endangered Species Act to penalize people who purposefully kill a wolf.



WOLVES IN THE NORTHERN FOREST ECOREGION

The Northern Forest Ecoregion

The Northern Forest Ecoregion is the largest remaining forest in the East. The region's 26 million acres stretch across the states of New York, Vermont, New Hampshire and Maine. Potential core wolf habitat encompasses a large portion of this region, but in general the landscape this booklet will focus on is northern and northwest Maine and northern New Hampshire. Suitable habitat for wolves exists in ecoregions adjacent to Maine and New Hampshire that include northeastern Vermont, northern New Brunswick and the Northern Forest Ecoregion of Quebec.



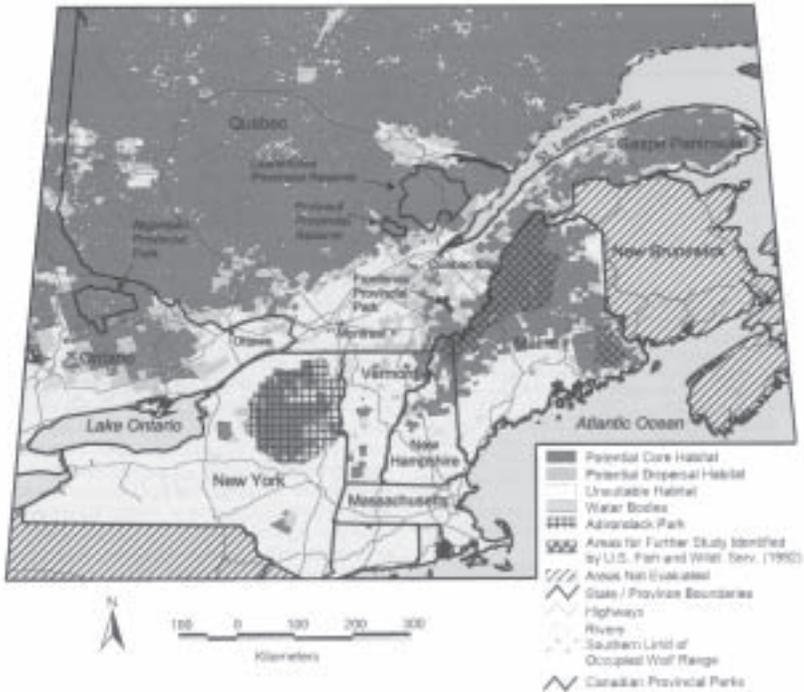
Wolves in the Northeast: Yesterday and Today

Gray wolves once ranged throughout the Northeast. Prior to the destruction of forested habitat and the decimation of native ungulates – woodland caribou, deer and moose – wolves were abundant in the forests of the Northeast.

New England towns regularly organized recreational hunts where all species of wildlife were driven to a central point and shot to rid them from the land. The wolf disappeared from the Northeast, by the mid 1800s under this form of persecution. The wolf's last stand was in the Boundary Waters of Minnesota, where humans could not pursue them into the remote wilderness of Canada.

Today there are no documented gray wolf packs in the forests of the East. There are occasional reports of wolves, but on investigation, most turn out to be large coyotes, free-roaming domestic dogs or wolf-dog hybrids that have escaped or been released from captivity.

Although wolves were extirpated in the state of Maine by the early 1900s, recent evidence from 1993 and 1996 suggest that occasional animals may be dispersing into the state from Quebec. The Maine Department of Inland Fisheries and Wildlife surveyed over 1,296 km of transects during the winter of 1998-99 and on two occasions observed large canid tracks. Nothing was confirmed.



Distribution of occupied and potential habitat for eastern timber wolves in northeastern North America.

Reprinted from *The Wildlife Society Bulletin*, 1998, 26(4): 767-775, with permission of the publisher and authors D. Harrison and T. Chapin, Dept. of Wildlife Ecology, University of Maine.

Currently, wolves may be present in Sherbrooke, Quebec, leading to the possibility of wolves dispersing into the states of Maine or New Hampshire and the possibility of natural recovery taking place. If the Quebec government were to limit the hunting and trapping of wolves, natural recovery would be more likely to succeed. In conjunction with the FWS, National Wildlife Federation will be working toward a political solution to the Canadian harvesting issue. During the winter of 2003, NWF launched a ground survey team of professionals and volunteers to look for wolf sign. Survey work efforts will continue to enable a better understanding of wolf movement from Quebec.

Potential Wolf Habitat

In 1998, a Geographic Information System (GIS) analysis evaluated the potential wolf core habitat in the eastern United States. The study estimated that the Northeast contains over 29 million acres of “suitable habitat” with potential travel corridors to areas in Vermont, New York and other regions in Northern Maine. (Harrison and Chapin, 1998) Suitable habitat for wolves has to include the following factors: ample prey and freedom from high levels of human interference and persecution. In forested areas such as the northeast, suitable wolf habitat is typically described as containing 1 to 4 humans per square mile and with a road density of 0.4 to 0.7 miles of road per square mile.

Public Opinion

Public support for wolf restoration is strong. In 1998, the Maine Wolf Coalition did an independent “Attitudes Survey” through the University of Maine on the following:

1. General knowledge about wolves
2. Attitudes toward wolves
3. Feelings about wolf populations recovery in Maine.

Out of a random sample of 2400 licensed drivers over 18 years old, 16% mailed a return. The results indicated a support for wolf recovery in Maine. Seventy-nine percent supported natural recolonization and 54% supported reintroduction, if natural recolonization was unlikely. Interestingly, 83% of respondents, who are hunters, believe wolves already exist in Maine and 75% of non-hunters believe this.

In a 2000 survey done by the Maine Department of Inland Fisheries and Wildlife, 61% of respondents supported natural recolonization and 61% supported protecting wolves that migrate naturally into the state. The majority of these respondents agree that wolves have a right to exist in Maine and they would enjoy seeing or hearing wolves. The results of the two surveys confirm that people are not opposed to wolves, but are not sure or are opposed to reintroducing wolves into Maine.

The Henry P. Kendall Foundation polled 1,257 northern and southern New Englanders on nature conservation in northern New England. The poll tested attitudes on a wide number of issues including the topic of bringing the wolf back to northern New England. Six in ten northern New England (Vermont, New Hampshire and Maine) residents (63%) believed it is “important to have wolves for the balance of nature”. A quarter (27%) still believed wolves to be dangerous to humans. Southern New Englanders were also surveyed and the findings were similar to the northern New Englanders.

Why Wolves in the Northern Forest?

There are many reasons why FWS, state wildlife agencies, and the public might consider a wolf restoration program for the Northeast.

First, there are ecological reasons. When large predators are present, ecosystems are healthier, more resilient, and more complete than where predators are absent. As a dominant predator, wolves play a critical role in the way that many wildlife species interact with each other and the habitat in which they live. All species of wildlife in the East evolved in the presence of wolves. Wolves have many effects on species such as deer and moose, including how they use their summer and winter habitats and the age structure and composition of populations. Wolves also impact other predators and scavengers, including coyotes, bobcats, lynx and mountain lions. The removal of wolves from the East interrupted many natural processes, including the basic evolutionary and behavioral relationships of predators and prey. The restoration of wolves would help to restore these processes.

Also, there are legal reasons to restore wolves – federal agencies are required under the Endangered Species Act to work toward recovering species that are listed as threatened or endangered, on behalf of all U.S. citizens. The re-establishment of wolves in the Northeast is important to re-creating a continuous wolf population from Quebec to the U.S., thus increasing the likelihood for the long-term survival of the species in the eastern United States, and all that it represents.

In addition, for some people there are ethical, aesthetic, and spiritual reasons “to do right by the wolf” after centuries of fear and hatred led to its near extinction in the lower 48 states. Some Native Americans and others believe that wolves were put on Earth for a reason, and that we should honor and protect them even if we do not fully understand their purpose. Many people believe that wolves add richness to their lives in the form of beauty, grace and the pure exhilaration of hearing wolves calling in the wild.

Numerous organizations and individuals are actively promoting restoration of wolves in the Northern Forests. In October 1997, some 18 local, regional, and national organizations banded together to form the Eastern Timber Wolf Recovery Network. Later it was named the Coalition to Restore the Eastern Wolf (CREW). CREW combines the expertise and strength of more than 30 local, regional and national conservation organizations. The mission is to facilitate the recovery of the gray wolf in as much of its former range in the northeastern U.S. and southeastern Canada as feasible. Despite documented public support for restoration, existing laws and regulations present major obstacles to wolf restoration in the Northern Forests.

Getting Wolves Back

Currently there is no plan to restore wolves to the Northeast. In the future, wolves could be returned through active recovery efforts by transplanting wolves from healthy populations elsewhere, such as those of the Great Lakes.

Alternatively, wolves could potentially arrive in the Northeast by natural dispersal from existing populations in Quebec, (although some wolf biologists believe that this is unlikely in the foreseeable future).

WOLVES ON THE GROUND: RECOVERY PLANS THAT ARE WORKING

A Success Story: Wolves in the Great Lakes Region

The Eastern Timber Wolf Recovery Plan calls for a population of 1,250 to 1,400 animals in Minnesota and another 100 total in Michigan and Wisconsin, for five years. In the case of the Great Lakes, wolves have already surpassed their recovery targets. Minnesota's gray wolf population is at least 2,500 animals, and there are an estimated 500 gray wolves in Michigan's Upper Peninsula and in Wisconsin.

So, why are wolves in the Great Lakes region still listed under the ESA? They may not be for long. In 1998, FWS initiated efforts to delist wolves in the western Great Lakes (Minnesota, Michigan, Wisconsin). As part of this process, each state has to develop a wolf management plan. Minnesota, Michigan and Wisconsin have adopted wolf management plans. The FWS Wolf Recovery Team is currently reviewing the plans to see how well they ensure the species survival in the region. Delisting will take place only if the FWS can be assured that a viable population of gray wolves will persist under state management.

A Success Story: Wolves in the Northern Rockies

Wolves were listed as an endangered species in the lower 48 states in 1973. In 1987, the FWS adopted the Northern Rocky Mountain Wolf Recovery Plan. That plan only considered wolf restoration in the Rockies of Montana, Wyoming and Idaho. The plan, which NWF played a key role in developing, called for wolves to be translocated to Yellowstone National Park and central Idaho, while natural re-colonization was fostered in northwestern Montana as wolves moved southward from Canada.

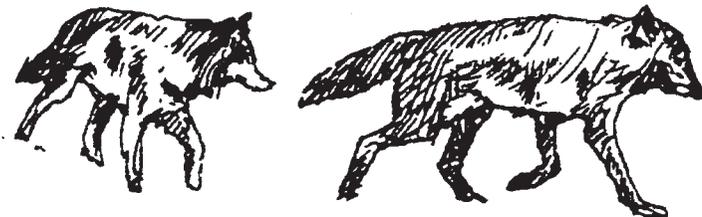
As of 2002, there were an estimated 108 wolves in up to 21 groups with at least 16 breeding pairs in northwestern Montana. In the Greater Yellowstone area there were about 218 wolves in 20 groups with at least 18 breeding pairs. Central Idaho had approximately 284 wolves and as many as 198 pups were born in Montana, Idaho, and Wyoming in April 2002. Wolves are also ranging in other areas, as far as eastern Oregon.

The plan established a recovery goal of 10 breeding pairs of wolves in each of the three recovery areas in three consecutive years. Wolf populations in the Northern Rockies have reached these goals and the UFWA announced that delisting of gray wolves in the Eastern and Western Distinct Population will be proposed by the beginning of 2004.



A Success Story in Progress: Mexican Gray Wolves

In 1998, Mexican gray wolves were restored to eastern Arizona. This is the most challenging of the three wolf restoration programs that the FWS has undertaken. Similar to the Northern Rockies, Mexican wolf recovery involves restoring and managing wolves in an area with a significant livestock industry; and similar to the red wolf program in the U.S. Southeast region, it involves “rewilding” captive-born wolves. In spite of these hurdles, the Mexican wolf program is succeeding. As of May 2002, there are at least 22 wolves within known breeding pairs. Of those, two pairs formed on their own and one produced second generation, wild-conceived offspring in 2002. These developments represent key steps toward a naturally functioning and growing population of Mexican gray wolves. Of 69 captive born wolves released since 1998, at least 16 survive in the wild. This success exceeds that of any other effort ever undertaken to “rewilding” a captive born canid. Future efforts will focus on documenting natural recruitment to the population. As a result, the Mexican Wolf Recovery Plan will be revised to identify overall down-listing and de-listing goals.

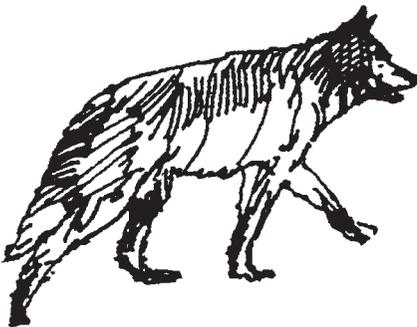


MANAGING RECOVERED WOLF POPULATIONS

In today's fragmented ecosystems, well-planned management programs are necessary to ensure the maintenance of healthy prey and predator populations. The presence of wolves can have a major impact on other wildlife and humans, so managing wolves is critical once they have been recovered in an area. Although it is rare for wolves to eliminate a species from an area, wolves can, in conjunction with other factors, reduce a prey population to lower levels. Wolf/prey interactions have been studied in many places and there is a rich knowledge base to draw on for the Northeast. The effect of wolves on prey populations depends on the number and variety of prey species in the area, weather conditions, habitat changes, land use and the effects of other predators, including the role and needs of humans. There is little evidence that wolves are solely responsible for prey declines except in concert with one or more other factors.

Good management can help to reduce the likelihood that prey populations will decline. For instance, experience in Minnesota demonstrates that deer herds can be managed to provide adequate numbers for both human hunters and wolves. Hunters have long known that protecting wintering habitat can increase deer and moose populations, as can a variety of other management tools such as selected logging, reforestation, and protecting riparian zones. Such measures will be needed to ensure the vigor of game populations in the future, with or without wolves.

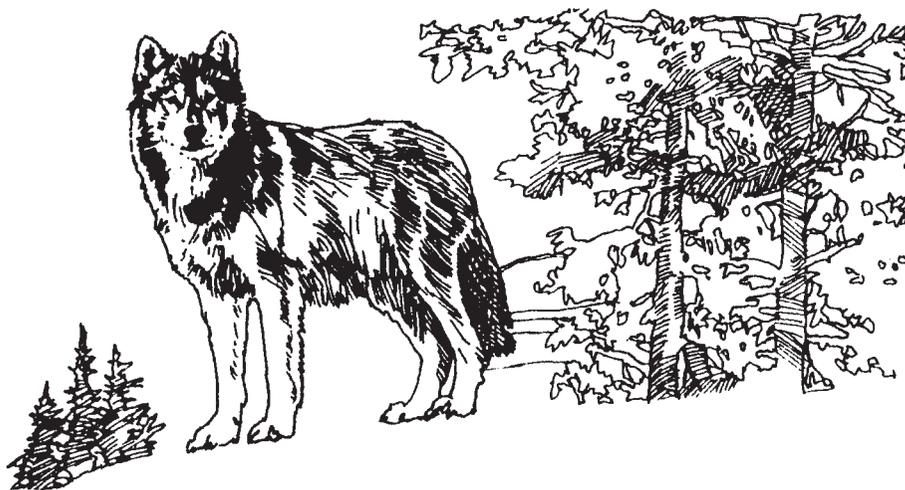
As so eloquently stated by Smith et al. (2003) in a paper titled *Yellowstone After Wolves*, "Science will be challenged to clarify exactly which changes in Yellowstone have been prompted by the addition of wolves. No wildlife population response at Yellowstone can be attributed to the actions of just one species (although coyotes may be an exemption) or to just one external event – such simplification of cause and effect is rarely possible in the science of ecology."



Well-planned state and federal management programs can provide the tools to intervene in potential wolf/human conflicts – as is commonly done with other wildlife species, such as beaver or black bears – before they become conflicts. Improvements in various management tools such as the use of live-traps and dart rifles, more efficient methods of transportation, advanced monitoring and communications, and increased access to wild areas make wolf management even easier than it was two decades ago. Radio collared wolf packs are fairly easy to locate and fresh wolf kills are often easy to identify, so remedial action can be taken by biologists if the need arises. Where wolf-caused livestock deaths have occurred in the Great Lake States and the Northern Rockies, individual wolves have been trapped and relocated, or killed.

Who Manages Wolves?

As long as the wolf is listed as an endangered or threatened species, the USFWS, in cooperation with state and tribal wildlife agencies, is responsible for managing wolves. Both state and federal courts have held that the states have the authority to manage all game and non-game wildlife not protected by federal law. Therefore, after the wolf is delisted, state wildlife agencies will assume responsibility for managing wolves. Management may include hunting and trapping of wolves. To date, wolves in the lower 48 states are still under the management of the FWS.



HOW WILL WOLVES AFFECT ME?

Wolves, Humans and Livestock

The impact of wolves on humans is mostly indirect. There are no documented reports of human deaths caused by wild, non-rabid wolves in North America. Wild wolves are normally shy and avoid contact with humans. Considering their wary nature and their low numbers, wildlife biologists do not expect wild wolves to ever present a danger to humans.

In the Northeast, the region suitable for wolf recovery is primarily forested land and contains only a small percentage of land supporting livestock. In Minnesota, where wolves reside with livestock, the average loss of livestock to predation by wolves is 0.03% annually. This translates on the average to 18 mature cattle, 87 calves, 23 sheep, and 16 dogs. Compensation is paid to the farmers by the Minnesota Department of Agriculture.

Wolves normally do not hunt livestock. Where natural prey is abundant, problems with livestock have been minor. Because most wolves do not prey on domestic stock, control can be targeted at offending individuals rather than at the entire population. Agency personnel can remove those few wolves that learn to feed on livestock so that the behavior is not taught to other wolves. Sometimes entire packs are responsible and must be controlled. Although the overall livestock depredation rate is low, some individual operators may suffer the bulk of the problems, due to the aberrant behavior of particular individual wolves. In the Northern Rockies, Defenders of Wildlife, a private, non-profit conservation organization, has established a compensation program to reimburse ranchers and farmers for bona fide losses to wolves. Private organizations have already offered a similar program if wolves recover in sufficient numbers in the Northeast.

Although wolf depredation on livestock is relatively uncommon, when problems do arise, the public demands immediate and certain action. Since wolves were first reintroduced to Yellowstone National Park in 1995, there have been a total of 41 cattle, 256 sheep, and 23 dogs confirmed killed by wolves, as reported by the FWS. Livestock losses caused by wolves represent a small fraction of the total loss caused by other predators, weather conditions, disease and natural causes, which in itself is a fraction of overall livestock losses. In 2001, wolf predation attributed about 0.1% of the total cattle losses caused by predators and wolf predation attributed 0.4% of total sheep losses caused by predators. These rates are one-third to one-half of the rates predicted in the original Environmental Impact Statement. For perspective, nearly 150,000 cattle, over 250,000 sheep, and some 1,300 horses are grazed seasonally on National Forest lands in the Yellowstone Recovery Area.

The FWS and USDA Wildlife Service treat wolf depredations seriously and address them aggressively. As of December 2001, in the Yellowstone Recovery area, the agencies moved wolves 42 times and killed 34 wolves specifically to reduce conflicts with livestock.

Wolf recovery has been complicated by a tension between promoting wolf survival and population expansion, and managing wolves to resolve conflicts with humans. Lethal control has proved to be the most effective, cost efficient, and logistically feasible method for dealing with problem wolves. Many wolf biologists would agree with wolf expert David Mech's belief that if wolf advocates could accept effective control methods, then wolves could live in far more places.

Wolves and Hunters

Hunters generally have positive attitudes toward wolves. They have expressed their support for wolves for recreational and emotional reasons. However, when hunters perceive wolves as competition for game species, their attitudes may change. People who have invested time, money and energy in hunting may not be tolerant of losing game species to wolves. However, surveys have shown the support of the hunting community for wolves. A survey in 1990 in Michigan concluded that Michigan's hunters consistently and strongly expressed the greatest sympathy, concern, ecological appreciation and outdoor recreational interest for the wolf of any group examined. A 1999 survey in Michigan concluded that the public clearly values wolves, viewing this animal as ecologically important, scientifically fascinating, aesthetically attractive, recreationally appealing and significant for future generations. Hunters surveyed in the area of northwestern Montana, currently inhabited by wolves, responded by a 3-to-1 margin, that they hoped wolves would continue to live there. A similar majority thought that wolves should be allowed to expand to other areas. Non-hunters shared similar views.

In the western Great Lakes states wolf populations have more than doubled in the 1990s, but white-tailed deer populations and hunter harvest have also grown substantially. In Minnesota, white-tailed deer populations have continued their strong recovery and have returned to levels seen prior to the severe winters of 1995-96 and 1996-97. Experience there suggests that wolves do not suppress deer numbers, except locally and in the short-term.

In Wisconsin, it has been found that when deer management areas, where wolves exist, are compared to those without wolves, there was not a significant difference in deer population fluctuations. The Wisconsin Wolf Management Plan states, "it appears that habitat and climatic effects have greater impacts on deer population trends than wolf predation."

As issues surrounding wolves are debated, it is important to keep in mind the common goal of maintaining or re-establishing the integrity of native ecosystems. Hunters increasingly realize that non-hunters have legitimate concerns and interests in how wildlife is managed. At the same time, non-hunters can understand that many, if not most, hunters do not want the wolf permanently exterminated. Hunters may want the number of wolves reduced at some times and in some places if they

are contributing to the decline of game populations, but this is very different from wanting wolves eliminated altogether. Experience has shown that, with proper science-based management, that wolves, deer, and hunting can co-exist.

For fur trappers, there will probably be no added restrictions during wolf recovery. State wildlife agencies are responsible for setting trapping and hunting seasons. These agencies regularly adjust seasons in response to changing conditions. As is currently the case, state agencies would limit seasons only if such a step were in the best interest of the wolf. (Currently, a wolf caught incidentally must be reported and turned over to wildlife authorities.)

Wolves and the Economy

Efforts to bring back wolves have not required closing areas to recreation, timber cutting or other commercial activities important to the economies of local communities. Wolf recovery depends on healthy populations of native prey and human tolerance. Activities that do not affect prey populations usually will not affect wolves. Thus, there is little biological need for restrictions. Wolves have demonstrated that they can live in a variety of landscapes that involve humans as long as those activities are relatively infrequent and disbursed across a large base. In addition, in some specific places, they can be economic generators.

Wolf related tourism in Ely, Minnesota where the International Wolf center is based, generates over \$3 million in annual revenues, supports 66 jobs in a rural community and attracts over 50,000 visitors each year. The Northern Forest region, already a tourism destination for some 70 million people, could benefit from wolf related tourism.

Anecdotal reports indicate that some negative impacts occur from guided big-game hunting in that area, which may now be offset by an increase in wildlife viewing. For instance, in 1995 there was one workshop on wolves in Yellowstone; whereas in the first half of 2000, there were over 50 workshops and classes on wolves in Yellowstone's Lamar Valley alone, offered by 11 different organizations.

A thorough economic projection of costs and benefits of wolf restoration in Yellowstone indicated that costs (in terms of foregone value to hunters and guides of ungulates killed by wolves, value of livestock losses, and costs of wolf management) would total \$0.7 to \$0.9 million per year. Benefits were estimated between \$6.7 to \$9.9 million annually. Costs of wolf management in the three-state Greater Yellowstone Ecosystem are estimated at approximately \$441,000 annually, which includes capturing and moving (or eliminating) problem wolves. (The total cost of wolf recovery work in the Northern Rockies for the period 1973-1994, which included preliminary research and planning phases for restoration in Yellowstone and Idaho, was \$5.5 million.) To the U.S. tax payer this equals about 12 cents each!



THE GRAY WOLF: A TOP PREDATOR

What Do Wolves Eat?

Wolves obtain the majority of their food from large mammals such as deer and moose. They also eat smaller mammals, including beaver, mice, ground squirrels, and birds, but larger mammals are their staple fare. A wolf needs five to twelve pounds of meat per day throughout the year. Consumption is usually higher in winter because energy demands increase and prey is more easily captured. Not all portions of a kill are always consumed. This carrion is not wasted, however, as it is an important food source for magpies, ravens, and other scavengers, as demonstrated by studies in Yellowstone.

How often a pack kills depends on the size of the pack, their hunting skills, the size of the predominant prey species, the density and condition of prey animals and the availability of carrion. Wolf packs preying mostly on deer and elk kill one big-game animal every two to eight days during the winter. This averages out to one prey animal per wolf every 23 days, or the equivalent of about 15 to 20 deer per wolf per year.

Prey Selection

Wolves kill those animals that are easiest and safest for them to capture, so the majority of the prey are individuals at some disadvantage because of age or diminished health. Young animals and old animals are preyed upon, as are diseased or deformed animals. Such culling of old and sick animals helps to maintain healthy prey populations. Wolves are capable of killing healthy adult animals, and do so if the opportunity arises, however, it is difficult and dangerous for wolves to kill large animals. Because of this, they often eat nearly the entire prey animal, including smaller bones. If conditions make hunting easier (for example, when crusted snow supports the wolf but not the prey), wolves may become more selective in what they consume and leave the less palatable parts of the animal. Now and then, the opportunity arises for wolves to kill several animals at once. In that event, large amounts of the prey may be left unconsumed. Many other predators are also reported to kill surplus animals at certain times. Wolves may revisit these sites later and clean up anything that scavengers have not already eaten.

The wolf's reputation for "cruelty" may come from its occasional inability to make a swift kill. Most wolf chases are short, less than 100 meters, and wolves kill prey as quickly as they can. However, when wolves wound formidable prey such as moose or bison they may retreat to a safe distance until the animal weakens and is safer to kill. Sometimes, wolves may even begin to feed before their prey is dead. Kills are often days apart, so hunger and competition with other pack members might cause them to start feeding immediately. Some have labeled such behavior as "cruel," but cruelty is a human term for a human trait. Wolves are not cruel; they are simply hungry. A wolf is no more cruel than a songbird picking apart an insect.

WOLF POPULATIONS

Pack Size

The size of a wolf pack varies, depending largely on the size and abundance of the principal prey. In Minnesota, Michigan and Wisconsin where white-tailed deer are the most frequent prey, packs average five individuals with one breeding pair per pack and five pups per litter. In Montana, Idaho and Wyoming, where elk are the most frequent prey, packs average 10 individuals. Biologists debate whether a larger pack facilitates the killing of larger animals or whether larger animals can feed more wolves. Wolves work together in their hunts, but even single wolves can kill a deer or an elk.

Limits on Wolf Numbers

Food availability is the biggest influence on wolf density in a given area. A limited food supply can be caused by weather conditions or other factors favoring the prey, as well as by low prey populations. Decreases in food availability – whatever the cause – result in: less frequent breeding by female wolves, fewer pups per litter, survival of fewer pups and even starvation.

It is rare to have more than one wolf per 10 square miles, because wolf packs regulate each other when prey availability is low. Packs require large territories (50 to 1,000 square miles, depending on pack size and prey density) and often kill individual wolves that intrude from neighboring territories. In addition, canid diseases such as distemper and parvovirus can take a heavy toll on wolf populations. Rabies is rarely reported in wolves.

Today in North America, it is people who ultimately control the number of wolves, just as we do deer, moose and bears.

Wolves, Coyotes and Other Wildlife

Wolves harass and kill coyotes. When wolves and mountain lions were exterminated in the east, populations of coyotes – which are quite tolerant of humans – migrated to the vacant territory from the west. This is the reason for the widespread distribution of the eastern coyote today. Experience demonstrated that when wolves move into an area populated by coyotes, coyotes are displaced and initially decrease in numbers. For example, wolves have eliminated 50 to 80 percent of coyotes from portions of Yellowstone, either because the coyotes were killed or were driven out of the area by wolves. In northwestern Minnesota, as wolves started to repopulate the region, coyotes were displaced and now occupy wolf pack territorial borders. In Quebec, north of the St. Lawrence River where the wolf population resides, coyotes are absent.

Some experts have wondered whether wolf and prey populations are naturally balanced at some constant number in ecosystems unaltered by humans. The answer is probably “no.” It is natural for animal numbers to fluctuate. Populations of both predator and prey change continually, responding to each other and to other environmental variables. Occasionally the predator is favored and prey populations decline. At other times, the prey species is favored and their numbers increase. Biologists cannot generalize about what kind of effect wolves have on their prey populations, because their effect is dependent on so many factors. It is possible to get an indication of wolf and prey population trends in a small area or system, but generalizing from one to the other is not always valid.

Wolves and Private Land Ownership

Public lands are the core land base where wolves have recovered in the Northern Rockies, but public land is not necessary to wolf survival in comparison to more important factors of food availability, disturbance patterns, and social tolerance. In the Northeast, 85% of the Northern Forest is in private ownership, and therefore, successful recovery of wolf populations will require a balance between the needs of private landowners and land managers and those of wolves. It is important that individual landowners’ needs and concerns are taken into consideration. In the Great Lakes region, which has a land use economy and environment similar to ours, wolves and private landowners have co-existed for decades. Some communities have embraced the wolf for its value to the community. Human attitudes and tolerance of wolves is the most important ingredient in the restoration of wolves. Only humans can allow them to return. Will you?



RESOURCES

FOR FURTHER EXPLORATION

Agencies and organizations:

U.S. FISH & WILDLIFE SERVICE

Gray Wolf Recovery

Bishop Henry Whipple Federal Building
1 Federal Drive
Fort Snelling, Minnesota 55111
Email: graywolfmail@fws.gov
<http://midwest.fws.gov/wolf/fnl-rule/index.html>

Northern Rockies Wolf Recovery

Ecological Services – U.S. Fish & Wildlife Service
100 North Park – Suite 320
Helena, MT 59601
Email: Ed_Bangs@fws.gov
<http://westerngraywolf.fws.gov>

Mexican Wolf Recovery

Southwest Mexican Wolf Recovery
Ecological Services Regional Office
Southwest Region US Fish & Wildlife Service
P.O. Box 1306, Room 4012
Albuquerque, New Mexico 87103-1306
Email: fw2eswol@fws.gov
<http://mexicanwolf.fws.gov>

STATE AGENCIES

Wisconsin Department of Natural Resources

Wisconsin Wolf Management Plan
PO Box 7921
Madison, WI 53707
<http://www.dnr.state.wi.us/org/land/er/publications/wolfplan/toc.htm>

Michigan Department of Natural Resource

Michigan Gray Wolf Recovery and Management Plan
Mason Building, Sixth Floor, P.O. Box 30028, Lansing MI 48909
<http://www.michigan.gov/dnr/0,1607,7-153-10370-12145-32569-,00html>

Minnesota Department of Natural Resources
Minnesota Wolf Management Plan
DNR Information Center
500 Lafayette Road
St. Paul, MN 55155-4040
<http://midwest.fws.gov/wolf/wgl/mn-wolf-plan-01.pdf>

Vermont Department of Fish & Wildlife
Kim Royer
100 Mineral Street, Suite 302
Springfield, VT 05156
Email: kim.royer@anr.state.vt.us

Maine Department of Inland Fisheries & Wildlife
Walter Jakubas
650 State Street
Bangor, ME 04401
Email: walter.jakubas@state.me.us

New Hampshire Fish & Game
Eric Orff
25 Main Street
Durham, NH 03825
Email: eorff@starband.net

NATIONAL WILDLIFE FEDERATION

11100 Wildlife Center Drive
Reston, VA 20190
www.nwf.org/wolves

Northeast Natural Resource Center
58 State Street
Monpelier, VT 05602
802-229-0650

Great Lakes Natural Resource Center
506 West Liberty Street, Suite 200
Ann Arbor, MI 48104-2210
734-769-3351

Contact your state wildlife agency and urge them to get involved in and support wolf recovery in your state.

SUGGESTIONS FOR FURTHER READING

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U.S. Fish & Wildlife Service. 1987. *Northern Rocky Mountain Wolf Recovery Plan*. U.S. Fish & Wildlife Service, Denver, CO, 199 pp.

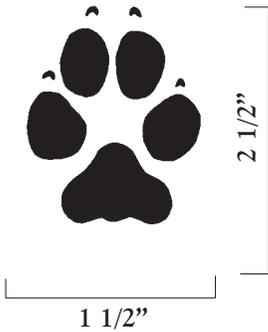
U.S. Fish & Wildlife Service. 1994. *Final Environmental Impact Statement: The Reintroduction of Gray Wolves to Yellowstone National Park and Central Idaho*. U.S. Fish and Wildlife Service, Helena, MT, 608 pp.

U.S. Fish & Wildlife Service. 2002. *Rocky Mountain Wolf Recovery 2002 Annual Report*. Helena (MT): USFWS

THE EASTERN COYOTE

Features:

- ▶ pointed ears held erect
- ▶ mid-way down the tail is a black tail gland spot, black tail tip
- ▶ variety of colors (gray,red,tawny)
- ▶ muzzle long & pointed
- ▶ feet proportional to body - may even look small
- ▶ 18" maximum height



VT F&WS

THE GRAY WOLF

Features:

- ▶ rounded erect ears
- ▶ tail held down, long & straight, never curls
- ▶ black, white all shades of gray & tan, grizzled, never spotted
- ▶ muzzle large & blocky
- ▶ massive, long legged, extremely large feet
- ▶ average 30" height



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58 State Street, Montpelier, Vermont 05602