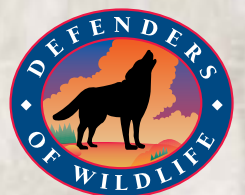


# Places for Wolves

*A Blueprint for Restoration and Recovery in the Lower 48 States*





## DEFENDERS OF WILDLIFE

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Special thanks to Carlos Carroll, Klamath Center for Conservation Research, for mapping input and review.

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Cover Photo: Gray wolf, Minnesota © James Hager/Robert Harding World Imagery (captive)



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# Places for Wolves

*A Blueprint for Restoration and Recovery in the Lower 48 States*







Timber wolf, Northwoods, Minnesota

“I’ve always said that the best wolf habitat resides in the human heart. You have to leave a little space for them to live.”

-Ed Bangs

*Northern Rocky Mountains Gray Wolf Recovery Coordinator  
U.S. Fish and Wildlife Service*

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# Foreword



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Gray wolf, Minnesota

Defenders of Wildlife has been a leader in wolf conservation since wolves were first listed under the Endangered Species Act (ESA) in 1973. At that time, wolves in the contiguous 48 states were nearly extinct, reduced to less than 1 percent of their range and fewer than 1,000 individuals, all in Minnesota. Through innovative conservation programs, extensive public education and outreach and, when necessary, legal action, Defenders helped restore gray wolves to Yellowstone National Park and central Idaho and played key roles in the reintroduction of Mexican wolves in the Southwest and red wolves in the Southeast. Recovery of these important species represents a major step in both restoring ecological balances and correcting earlier errors in public policy.

Defenders has also worked to ensure that the livestock industry does not bear the full burden of restoring wolves to their former range, much of which is now shared by humans. To reduce the economic hardship that can result from the occasional instances when wolves kill livestock, Defenders pays full market value to the livestock owner for each verified confirmed loss. Defenders established The Bailey Wildlife Foundation Wolf Compensation Trust in

1987, and to date has paid more than \$650,000 to livestock producers, primarily for cattle and sheep losses (see page 7).

Although paying compensation helps make wolf restoration more acceptable to ranchers, reducing the chances of individuals taking the “shoot, shovel and shut-up” approach, it is limited in that it addresses the problem after the damage occurs. To help prevent livestock losses, Defenders created The Bailey Wildlife Foundation Proactive Carnivore Compensation Fund to cost-share with livestock producers on projects to prevent conflicts between wolves and livestock. These projects include predator deterrent fencing, guard dogs, range riders, livestock relocation, carcass removal and alarm systems. Since establishing the fund in 1999, Defenders has invested about \$250,000 in more than 70 projects throughout the northern Rockies, the Southwest and the Great Lakes region.

Defenders’ efforts have helped pave the way for successful wolf restoration in the lower 48 states. Today, there are roughly 5,000 wolves in the contiguous states. However, despite the encouraging increases in wolf populations, we are far from the finish line. It is time to build on these successes and to heed the best tenets of science as well as common sense by expanding wolf restoration into other appropriate areas where the animals were unnecessarily eliminated.

In 1999, Defenders published *Places for Wolves: A Blueprint for Restoration and Long-Term Recovery in the Lower 48 States*. The publication provided an assessment of the remaining ecological regions that could support wolves and recommendations for on-going wolf restoration opportunities. It might be reasonable to assume that since 1999, the amount of public and private land available for wolf restoration would have decreased due to human population growth, new roads and development and associated loss of habitat. Instead, numerous new studies show significantly more suitable habitat for wolves in the lower 48 states, furthering our conviction that the job of wolf restoration is not complete. Indeed, the maps and recommendations provided in this updated *Places for Wolves* do not constitute the complete picture for potential wolf habitat in the contiguous United States. We must continue to study and advocate for wolf restoration opportunities that can assure the continued survival of wolves well into the future. Public enthusiasm for wolf recovery and the ecological, economic and cultural benefits wolves provide warrant nothing less.

Rodger Schlickeisen  
President, Defenders of Wildlife

# Executive Summary

For centuries, wolves have been feared and reviled by many cultures. Once among the nation's most widely distributed mammals, 300 years of extermination campaigns devastated wolf populations in the lower 48 states. By the 1970s, wolves were absent from all former ranges save a small area in northern Minnesota, where a remnant population survived.

Today, thanks to the ESA and the strong conservation ethic of the American people, both gray and red wolves are making a comeback. Increasingly, a viable wolf population is viewed as essential to a healthy ecosystem, an economic benefit to regions and a measure of the nation's progress in protecting and restoring its natural heritage.

Gray wolves have increased substantially in Minnesota and have recolonized parts of northern and central Wisconsin, Michigan's Upper Peninsula and northwestern Montana without human intervention. The U.S. Fish and Wildlife Service (FWS) reintroduced the gray wolf in central Idaho and in the Yellowstone ecosystem of Wyoming, Montana and Idaho, and that population is thriving. Dispersing wolves from the northern Rockies have reappeared in eastern-central Oregon, northern Utah, the North Cascades of Washington state and in central Colorado, although there is no evidence yet that they are establishing breeding populations in these states.

FWS reintroductions also are returning the Mexican gray wolf to Arizona and New Mexico and red wolves to northeastern North Carolina. Today, there are approximately 5,000 gray wolves and 100 wild red wolves in the lower 48 states.

As a result of the successful expansion of wolf populations, FWS is considering reclassifying gray wolves under the ESA. On its surface, the reduction and removal of federal protections would represent a conservation success story not only for wolves, but for the ESA and the policies and programs of FWS, other government agencies, certain Native American nations and several dedicated private conservation groups and individuals.

The recovery programs to date, however, are only the beginning of what it will take to achieve enduring success. They should be the foundation for further advances in wolf restoration, essential for ensuring long-term survival of the species and restoring ecological integrity to important ecosystems, as well as maximizing the many cultural values of wolves to the American people. We should not settle for less ambitious wolf restoration goals than the recovery of the species requires, ecological integrity warrants, and the wolf's cultural value justifies.

Defenders of Wildlife believes that achieving true long-term recovery of the gray wolf and red wolf requires

not just protection and expansion of current populations, but also active restoration of these species in additional areas. Maintaining multiple, resilient populations of wolves in numerous biologically and socially suitable areas of their former range should be the standard by which recovery is judged. Consequently, Defenders urges FWS to:

- Ensure ongoing conservation of existing wolf populations in the northern Rockies and Great Lakes states through sufficient federal protections and, when appropriate, adequate delisting plans that guarantee continued recovery under state management.
- Support expansion of existing northern Rockies wolf populations through continued federal protections in neighboring states, such as California, Colorado, Oregon and Utah, that do not currently have wolves but do have suitable habitat and natural prey.
- Restore viable populations of gray wolves in additional suitable areas in the United States, including the Northeast, Pacific Northwest, southern Rockies and Southwest, through active reintroduction or facilitated natural recovery.
- Reintroduce red wolves in at least two additional locations within their historic range in the Southeast.
- Encourage wolf restoration on nonfederal lands by working with Congress and the conservation community to develop incentives for private landowners and tribal governments.
- Transfer management responsibility for wolves to state agencies once a state has addressed factors threatening wolves and has developed a management plan that demonstrates their continuing commitment to wolf restoration and long-term recovery.
- Work closely with federal and provincial governments in Canada and Mexico to encourage maintenance of corridors for wolf dispersal across international borders.
- Work with the Department of State to negotiate a treaty with Canada and Mexico to provide international protection for wolves and other large predators in North America.

For these recommendations to succeed, people living in wolf country must be able to tolerate and co-exist with wolves. This will require innovative programs combining incentives and compensation, as well as ambitious outreach and education to help dispel myths and understand local concerns. To achieve wolf restoration in the lower 48 states, federal, state and tribal agencies, conservation groups and concerned individuals all must play a role.

# Wolves and People



Gray wolf with ranch in background, southwestern Montana. Livestock compensation and predation prevention programs have helped build acceptance of wolves among ranchers.

Perhaps no other creature elicits more varied and intense emotions from people than the wolf. Throughout the centuries, myth, folklore and misinformation bred fear and hatred, which in turn gave rise to eradication programs designed to eliminate wolves. Persecution of wolves dates back at least to ancient Greece. In the New World, systematic destruction of wolves began within the first decade of British colonization early in the 17th century.

When Europeans first set foot in North America, the gray wolf (*Canis lupus*) ranged across the continent from Mexico's Central Plateau to Canada and Alaska's low Arctic, and from the Pacific Ocean to the Atlantic Coast. The species was the most common large carnivore in North America. The red wolf (*Canis rufus*) occupied the deciduous forests of the southeastern United States, from southern Pennsylvania to Florida and from the Mississippi Delta to the Atlantic. The two species combined may have numbered 400,000 or more prior to European contact. By the 1970s, three centuries of persecution had eliminated wolves of both species from the wild everywhere in the contiguous United States except in northeastern Minnesota, where fewer than 1,000 gray wolves remained.

Fortunately, the past several decades have brought a growing appreciation of wolves. To many, the wolf is a cherished symbol of wilderness. Others recognize the important role wolves play as a keystone species, helping to regulate the environment around them in beneficial ways. Economists are discovering that wolves can be good for the bottom line. Wolf restoration in the northern Rockies has stimulated a tremendous growth in tourist dollars as people flock from afar to see Yellowstone's famed Lamar Valley wolves. Farmers in northeastern North Carolina are similarly developing tourism programs based on red wolves in rural counties where there are few other sources of sustainable income. And numerous public surveys demonstrate that the vast majority of Americans strongly support wolf restoration (Williams, Ericsson and Heberlein 2002).

Wolves were one of the first species listed under the ESA in 1973. In 1978, FWS designated wolves in Minnesota as threatened and gray wolves everywhere else in the lower 48 states as endangered. Red wolves were listed in 1973 as endangered. Federal protections and recovery actions for the



two species have resulted in significant increases in wolves in the Great Lakes region, gray wolf reintroductions in Yellowstone, central Idaho and the Southwest, and red wolf reintroductions in northeastern North Carolina.

Currently, about 5,000 gray wolves survive south of the Canadian border, approximately 3,000 of them in Minnesota. While this trend is encouraging, this is nothing compared to the hundreds of thousands that roamed the region prior to European contact and is only a fraction of the number that remaining suitable wolf habitat could support. To achieve long-term success, we need active

restoration of more wolves in more areas. In addition, there must be adequate federal and state regulations that ensure continued conservation of the species. Some states, in particular Idaho and Wyoming, have failed to demonstrate a commitment to—or the capability of—ensuring long-term conservation of the wolf.

It is not too late to make the return of our native wolves a resounding conservation success story. When the opportunities for wolf restoration are fully realized and have the support of federal and state governments and the public, then we can celebrate the recovery of these species.

## BUILDING ACCEPTANCE FOR WOLVES

### Compensation

Although the number of livestock lost to wolves is low overall, these losses can have a significant economic impact on those ranchers who do experience chronic wolf predation. By taking responsibility for the occasional problems that wolves cause, Defenders of Wildlife hopes to increase landowner tolerance for wolves, reduce mortality and improve recovery prospects. Since 1987, The Bailey Wildlife Foundation Wolf Compensation Trust administered by Defenders has paid more than \$650,000 to compensate for livestock killed by wolves in the northern Rockies and Southwest. (Defenders does not offer compensation in the Great Lakes or Southeast because publicly funded programs cover wolf-caused losses there.)

In 2005, we surveyed compensation recipients (livestock owners with confirmed losses to wolves) to assess the effectiveness of the program (Stone et al. 2005). Our survey respondents represent 44 percent of those who applied for and received compensation from 2002 to 2004. Almost 80 percent of these respondents were not in favor of wolves in their area, but nearly 70 percent said they were satisfied with the amount of compensation they received. This indicates a high level of satisfaction with their compensation despite negative attitudes toward wolves overall. Most important, nearly all respondents stated that their tolerance toward wolves would be lower if compensation had not been available. Encouragingly, these respondents also indicated a high level of learning about—and implementing—nonlethal methods to reduce conflicts with wolves.

### Prevention

Protecting wolves is particularly challenging because it requires balancing the needs of people, predators and livestock. To meet the challenge, Defenders created The Bailey Wildlife Foundation Proactive Carnivore Conservation Fund in 1998 to reduce conflicts between humans and predators, prevent the unnecessary killing of predators by government agencies charged with responding to conflicts, and improve public acceptance and appreciation of predators and predator conservation. Defenders collaborates with individuals, communities, organizations and government agencies to offer full or partial support for carefully chosen projects employing the best available measures for reducing the potential for problems with wolves and other predators. Successful techniques include the use of livestock guarding dogs, fencing, fladry (rope strung with bright-colored flags at fixed intervals), livestock relocation and the use of range riders to patrol grazing lands. Through this fund we help ranchers, property owners and communities live successfully and responsibly with wolves.

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A federal wolf specialist installs fladry—heavy twine strung with colorful strips—around a sheep-grazing area in Idaho. Defenders helps pay for fladry, a known wolf-deterrent.

# Why Restore Wolves?

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There are three main reasons to restore wolves. First, the very survival of wolves depends on having a sufficient number of wolf populations large enough to provide for the continuing viability of these animals. Second, wolf restoration is necessary to return a measure of ecological integrity to native ecosystems and restore the balance of nature. Third, wolf restoration provides economic, recreational, spiritual and aesthetic benefits to many Americans. For these reasons, discussed in more detail below, Defenders wants to realize the widest practical restoration of wolves in the lower 48 states.

## Long-Term Recovery and Viability

The long-term survival of any species depends on the size, number and connectivity of its populations: the larger and more connected, the more likely wolves are to persist in the face of threats such as drought, habitat alteration, disease or food shortages. Determining how many populations of what size can assure the long-term survival of a species is neither an easy task nor one likely to be accomplished without professional disagreement. But clearly, the four or five populations of gray wolf subspecies extant today in the lower 48 states, totaling approximately 5,000 individuals, are a mere shadow of the hundreds of thousands of wolves that once roamed the continent. These populations represent perhaps 1 percent of the pre-Columbian abundance of the gray wolf. For the red wolf, the percentage is likely even lower. These population remnants are the thinnest of threads by which to assure the continued survival of the wolf.

## Ecological Integrity

Predators and predation play a dynamic and essential role in maintaining the health of ecosystems. Wolves prey mostly on animals that are young or elderly, sick or injured, and weak or unfit, thus keeping prey populations healthy and vigorous (Carbyn 1983). By preventing large herbivores such as deer and elk from becoming overpopulated, wolves help maintain native biodiversity. When deer and elk become too abundant for their habitat, they overgraze it and may destroy the plant base, making the habitat less suitable for other species.

Removal of wolves from large areas of the United States in the 19th and early 20th centuries altered the natural relationships among animals ecologically associated with wolves. This disruption led to increases in some species and declines in others, adversely affecting biological diversity. Removing large predators allowed smaller, more

Gray wolf, Montana



## WOLVES, ELK AND DEER

Other than predation on domestic animals, few topics instigate more debate about wolves than their impact on deer and elk. But do wolves really take hooved game that would otherwise be available to hunters? The answer lies somewhere between “rarely” and “almost never.”

Except when winters are extremely severe, the number of elk killed by wolves is not high enough to have a widespread biological impact on elk populations (Garrott et al. 2005). In the northern Rockies elk abundance is mostly influenced by annual precipitation, winter snowfall and hunter harvest (Vucetich, Smith and Stahler 2005). Unlike wolves, which attack weaker animals because they pose less of an injury threat, hunters target animals in prime condition and can thus reduce elk population growth by a factor greater than the harvest rate (Vucetich, Smith and Stahler 2005). In the

western United States, elk have declined where there are no wolves at all (Johnson, Wisdom and Cook 2004). And if hooved big game does decline, it can be difficult to distinguish predation by wolves from predation by bears, mountain lions and other large carnivores (Ruth et al. 2003). When hunters observe fewer elk or deer on their favorite hunting grounds, it may be because wolves simply cause their prey to be more vigilant and to seek out deeper cover (Ripple and Beschta 2004).

So, while it is true that wolves prefer regions with high abundances of elk and deer, there is no evidence that wolves deplete game animals over extended periods of time or across large regions. Otherwise, this carnivore and its prey could hardly have achieved long-term coexistence.

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Bull elk, Yellowstone National Park





Indian Plains Powwow participant in wolf headdress, Cody, Wyoming. Many Native American traditions honor wolves.

generalized predators to increase their numbers, range and exploitation of food sources. For example, when gray wolves were eliminated, coyote numbers exploded. Similarly, elimination of red wolves from the southeastern United States was followed by an increase in coyotes and raccoons, which in turn caused a reduction in wild turkeys (Miller et. al. 1997).

In Yellowstone National Park, scientists are documenting the important role reintroduced wolves are playing in rebuilding greater biodiversity within the ecosystem. Since the reintroductions in 1995 and 1996, studies have demonstrated the wolf's ability to cull weak and old ungulates (hooved animals such as elk and deer) (Smith, Peterson and Houston 2003) and to reduce long-term concentration of elk herds and the damage they do to sensitive meadows and wetlands (Ripple and Beshta 2004). In what is known as the cascade effect, wolves are exerting influence over a multitude of species within the park's

ecosystem. Elk, wary of the reintroduced top predator, have altered their grazing behavior. With less grazing pressure from elk, streambed vegetation such as willow and aspen is regenerating after decades of overbrowsing. As the trees are restored, they create better habitat for native birds and fish, beaver and other species. In addition, wolves have reduced Yellowstone's coyote population by as much as 50 percent in some areas, which in turn has increased populations of pronghorn and red fox (Crabtree and Sheldon 1999).

According to a recent scientific review of the ecological importance of top predators such as the wolf, the presence of these predators is essential to the long-term maintenance of biodiversity. In the interest of maintaining overall biodiversity, high priority should be given to the re-establishment of such predators wherever they have been extirpated and where viable habitat remains to support their re-establishment (Terborgh et al. 1999; Soulé et al. 2003).

Since the 1970s, numerous public opinion polls have found that an overwhelming majority of Americans supports efforts to protect and restore wolves.

## Cultural Importance

The cultural importance of wolves runs the gamut from the spiritual to the moral, from the aesthetic to the recreational. Wolves can even have positive economic importance for communities close to wolf populations.

The peoples who inhabited North America when Europeans first arrived were well acquainted with wolves. Many Native Americans, incorporating wildlife into their everyday and spiritual lives, ascribed wolves with powers ranging from the creation of tribes to the ability to heal the sick. For example, the Arikara believed a wolfman spirit made the Great Plains for them and for other animals. The Cheyenne credited wolves with teaching them how to survive by hunting. In the northern Rockies, the Nez Perce tribe has played a leading role in restoring wolves to Idaho. Tribal school children named one of the first reintroduced wolves “Chat Chaah,” which means “elder brother.”

Since the 1970s, numerous public opinion polls have found that an overwhelming majority of Americans

supports efforts to protect and restore wolves (Williams, Ericsson and Heberlein 2002). In general, survey respondents who favor wolves cite ecological and cultural reasons for their views. Many respondents point to our obligation to future generations for maintaining and restoring natural ecosystems that include wolves.

Some people value wolves as a symbol of nature’s beauty and believe that their presence contributes to the wilderness experience. Indeed, a number of studies have shown that wolves are so appealing to people that the animals have had a positive effect on tourism and associated industries in areas where the animals are present.

In the light of these ecological and cultural benefits, the American public has said loudly and repeatedly that it favors wolf recovery. Strong public support for wolf restoration, engendered by the animal’s ecological and cultural values, has been the impetus for the progress toward wolf recovery achieved to date under the ESA and is compelling evidence of the American people’s desire to finish the job.

## ECONOMIC BENEFITS OF WOLVES

Scientists have verified what wolf supporters have long-suspected: Wolves are good for the bottom line. Merchants in Yellowstone National Park’s gateway communities have attributed an economic upturn to the return of the wolf (Milstein 1995, Brooke 1996). According to a 2006 study by John Duffield of the University of Montana, more than 150,000 people visit Yellowstone annually specifically because of wolves, bringing \$35 million to Idaho, Montana and Wyoming each year. Duffield determined that nearly 4 percent of the park’s 2.8 million annual visitors say they would not have visited the nation’s oldest national park if wolves were not there. In addition, those dollars turn over in local communities, pushing the regional economic impact to about \$70 million a year (Duffield, Patterson and Neher 2006).

In Minnesota—a state from which the wolf never disappeared—the International Wolf Center in Ely added \$3 million to the local economy in 1995 and created, directly or indirectly, the equivalent of

© RED WOLF COALITION



Learning about red wolves, North Carolina

66 full-time jobs (Schaller 1996).

A 2005 study of ecotourism and red wolves in northeastern North Carolina demonstrated that tourists vacationing at the popular Outer Banks beaches would take day trips and spend money to visit nearby red wolf territory. While the chances of seeing a red wolf in the wild are slim, visitors are interested in attending wolf “howlings” and viewing other wildlife—such as black bears, river

otters and waterfowl—that share red wolf habitat. The study also revealed that 100 percent of the local residents surveyed in the rural areas where red wolves reside would be interested in building tourism businesses based on red wolves and other wildlife (Lash and Black 2005).

In the Southwest, wolf-related tourism is growing and economic analyses show that Mexican wolf reintroduction has generated substantial regional economic benefits (Kroeger, Casey and Haney 2006).



# Recovery Requirements



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Gray wolves on the run, Montana

**T**o guarantee the long-term survival of wolves, it is essential to restore them to multiple places in numbers large enough to protect against natural or manmade disasters and with enough connectivity to other populations to provide for dispersal and therefore gene flow among populations. To do this successfully, several biological principles must be met.

## Representation

Because the genetic makeup of every species is shaped, through natural selection, by the environments in which it occurs, successful long-term conservation means saving species in the fullest possible representation of environments in which they historically occurred.

The gray wolf's pre-Columbian distribution in North America extended from the low Arctic of Canada and Alaska to the high plateau of central Mexico. Within this range, the animal occupied a variety of habitats and preyed

on a variety of species, from caribou in the Arctic to moose on the taiga, from elk and mule deer in the Rocky Mountains to bison on the prairie. Wolf preservation today could be achieved by maintaining large, healthy populations of wolves in Alaska and Canada only, but that would not meet the biological definition of conservation, which requires healthy wolf populations in as many of the wolf's original environments as practical. Although the opportunity to restore the gray wolf to all of its original environments may be gone for good (e.g. eastern croplands), many opportunities remain for a fuller restoration of the species (e.g., in the northeastern forests, the southern Rockies and the Pacific Northwest along the U.S. and Canadian Rocky Mountains).

## Resiliency

If the chances of extinction depend, in part, on population size, then what size is sufficient to constitute recovery?



## Long-term recovery of wolves requires connected wolf populations, all linked by a continuum of functioning dispersal corridors.

Despite several decades of work on this issue, scientists still cannot say with certainty what size population and area of habitat renders the wolf resilient (essentially safe from extinction). But the area of disagreement is diminishing. Estimates for the size of a viable population run anywhere from 50 (Franklin 1980) to 5,000 or more (Lande 1995), with 2,000 a commonly cited figure (Soulé 1987, Shaffer 1992). A recent survey of wolf experts put the figure at a minimum of 300 for a “self-sustaining wolf population” if the population were totally isolated (Biodiversity Legal Foundation 1998).

Given the uncertainties about the relationship between population size and the probability of extinction, Defenders believes FWS should take a conservative approach to the issue. FWS recovery plans should not dismiss areas capable of supporting less than several hundred wolves, especially if such areas can add to the ecological representation of the species.

### Redundancy

Brakes in most modern automobiles are what engineers call a “redundant system.” There are two sets; if one fails, the other kicks in to stop the vehicle. This redundancy is necessary for safety. Endangered species conservation also requires redundancy—in this case recovered populations in multiple areas—as a hedge against the catastrophic loss of any single population.

### Ecologically Effective Populations

Most ecologists agree that wolves are “strongly interactive species,” meaning their interactions with other life forms contribute substantially to ecological effectiveness—the maintenance of habitat and species diversity. It is now widely understood that the disappearance of a strongly interactive species leads to profound changes in ecosystem composition, structure and diversity (Terborgh et al. 1999, Oksanen and Oksanen 2000, Schmitz, Hamb and Beckerman 2000, Soulé et al. 2003, Ripple and Beschta 2003, Ripple and Beschta 2004). Protecting the health of our native ecosystems requires maintaining population densities and distributions of strongly interactive species such as the

wolf above the threshold for ecological effectiveness.

Defenders advocates restoration of wolf populations to ecologically and evolutionarily effective levels so that they may fulfill their natural keystone role of ecosystem regulation, supporting the diversity and health of native flora and fauna.

### Connected Populations

Advances in the sciences of population ecology and biology clearly demonstrate the importance of connectivity among populations. Functional dispersal corridors, which allow for the intermittent exchange of genetics among populations, are essential to support long-term viability of wolf populations. For example, portions of northeastern and eastern Utah are potential wolf recovery habitat and important dispersal areas for connecting the northern and southern Rockies’ wolf populations.

FWS should work closely with other land management agencies and governments to restore and maintain crucial linkages among patches of suitable wolf habitat. Long-term recovery of wolves requires connected wolf populations, all linked by a continuum of functioning dispersal corridors.

Additional steps also must be taken to ensure that wolf populations are conserved in Canada and that connectivity is maintained between U.S. and Canadian wolf populations. Defenders’ Canadian program is working closely with colleagues in the United States and ministries in Canada to address and reduce threats to wolves in southwestern Alberta, ensuring continued cross-border connectivity.

Although the wolf has been restored successfully to several areas, it is still absent from the bulk of its historic range throughout the lower 48 states—including many areas that still provide suitable habitat. Recovery implies a high degree of species viability that requires a representative set of multiple, resilient populations in the wild. For these reasons, Defenders believes the gray wolf and red wolf are far from fully recovered in the lower 48 states. FWS has made a good start on restoring the gray wolf and red wolf to selected areas of their historic ranges, but it is only a start. Much remains to be done to assure the American public that its native wolves will survive long into the future.

# Places for Wolves



Wolf pup siblings, Minnesota

**D**espite the laudable success of wolf recovery efforts to date, many areas with suitable wolf habitat remain devoid of wolves today. Indeed, only a fraction of the potential that exists for restoring wolves and the ecosystems to which they belong has been met.

The gray wolf is well on the way to recovery in the Great Lakes region, but is absent in the Northeast, despite suitable habitat for reintroduction. Wolves are recovering in central Idaho and the Yellowstone ecosystem, but lethal control and illegal killings have hindered natural recolonization in northwestern Montana where dispersal should be monitored and supported vigorously. In addition, wolves should be actively returned to other suitable areas, including the Pacific Northwest and the southern Rockies. The Mexican wolf has been reintroduced in

eastern Arizona, but will require persistent and unfaltering support—and at least one additional population in the Southwest—to demonstrate the same degree of success as wolves in the Yellowstone ecosystem and central Idaho. For the red wolf in the Southeast, meeting the goals of the current recovery plan will require the successful reintroduction of two additional wild populations.

Following are discussions and detailed maps of the seven places in the lower 48 states that have wolves or a great potential to support thriving wolf populations. These areas were selected based on two criteria: 1) They would add to the ecological or geographical representation of the species; and 2) They have been evaluated in formal feasibility studies and deemed capable of supporting 50 or more wolves.



## Wolf Range in North America: Past, Present and Potential





## The Northern Rockies

	Northwest Montana	Central Idaho	Yellowstone Ecosystem	Utah
<b>Size of Area</b>	12,124 sq. mi.	30,093 sq. mi.	28,856 sq. mi.	14,062 sq. mi.
<b>Primary Prey</b>	Elk, mule deer, white-tailed deer, moose	Elk, mule deer, white-tailed deer, moose	Elk, mule deer, white-tailed deer, bison, moose	Elk, moose
<b>Number of Wolves in Area</b>	100 (population goal); 130 (2005 population estimate)	100 (population goal); 565 (2005 population estimate)	100 (population goal); 325 (2005 population estimate)	Capacity not fully evaluated

Sources: Carroll et al. 2003; U.S. Fish and Wildlife Service et al. 2006; www.utah.gov 2006

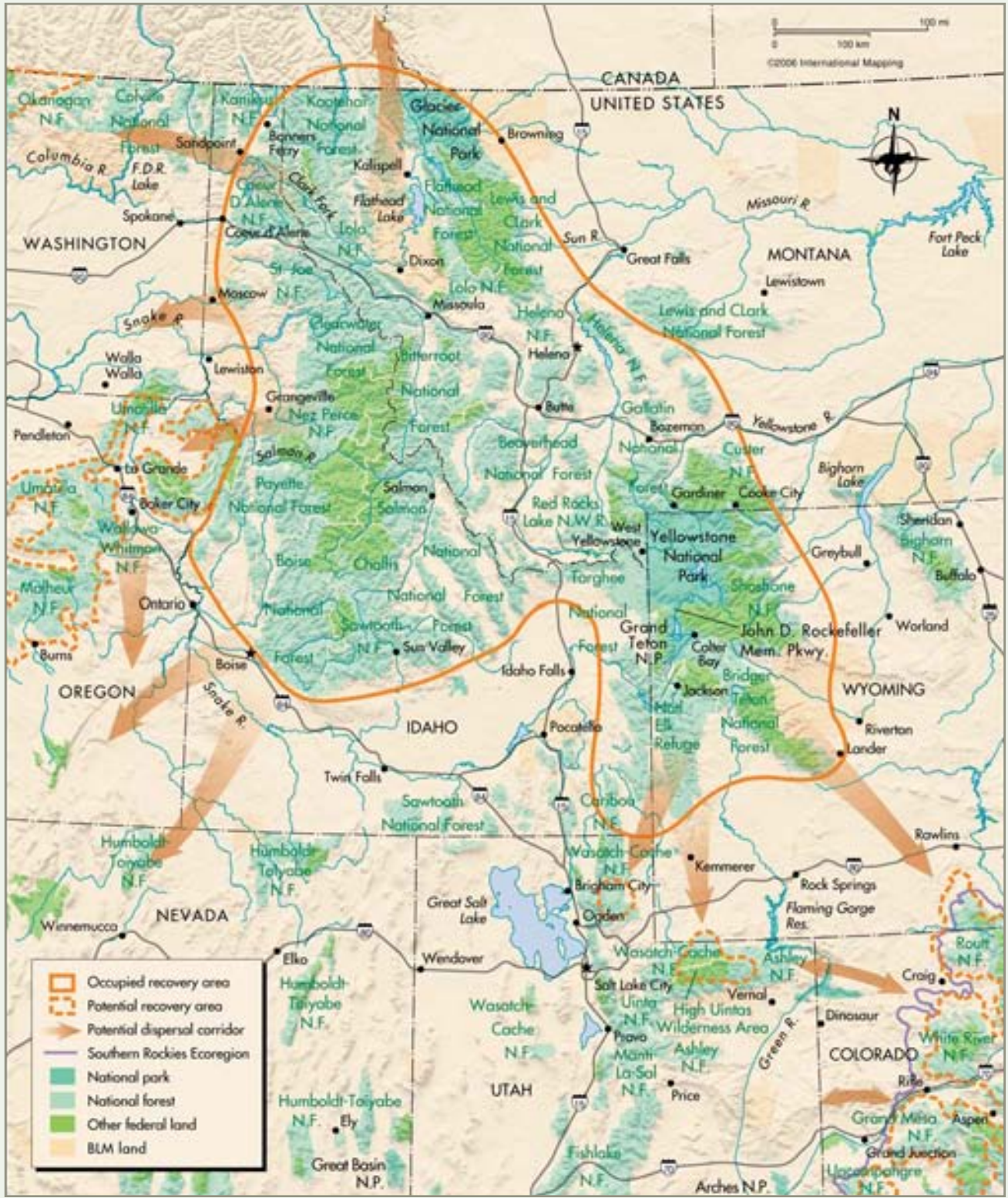
The northern Rockies were once a stronghold of wolves, but control programs initiated in the 1880s essentially extirpated the species there by the 1930s. The 1995 and 1996 reintroductions of Canadian gray wolves in Yellowstone National Park and in Idaho’s Frank Church River of No Return Wilderness Area were remarkable wolf restoration achievements. As permitted under the 1982 amendments to the ESA, FWS designated these animals “experimental, nonessential” populations. This special designation gave landowners a limited right to kill wolves caught in the act of attacking livestock on private property and increased the ability of FWS to remove or destroy problem wolves. This special rule was amended early in 2005 to reduce protection for wolves and allow livestock owners to kill wolves that were harassing livestock.

The reintroduced gray wolves and their offspring in Yellowstone now number about 325, and in central Idaho the population has grown to about 565. A separate gray wolf population in northwestern Montana, founded by animals that crossed the border from Canada on their own beginning in the late 1970s, has reached roughly 130 individuals. Wolf population growth in northwestern Montana has stagnated due to heavy use of lethal control and illegal killing, but the populations in Yellowstone and central Idaho have thrived. Livestock losses to wolves have been limited, and land-use restrictions feared by many opponents of wolf reintroduction have been essentially nonexistent.

Nevertheless, wolf recovery in the northern Rockies has

not been without its critics and controversies. The American Farm Bureau Federation and the Wyoming Farm Bureau filed suit in 1994 to halt wolf reintroduction. This suit argued that wolf reintroduction harmed ranchers and farmers by increasing predation on their animals and by lowering land values. Though they lost the suit, many in the livestock industry still feel bitter about the federal reintroduction. In 2001, the Idaho state legislature almost unanimously passed House Joint Memorial 5, which demands the removal of all wolves from Idaho by “any means necessary.” The Idaho wolf management plan, published in 2002, is prefaced by the claim that House Joint Memorial 5 remains the official position of the state of Idaho. In January, 2006, the Interior Department signed an agreement granting the state management authority over wolves within the state. Less than a week later, the Idaho Department of Fish and Game announced its proposal to kill 75 percent of the wolves in Clearwater National Forest’s Lolo district, based on unsubstantiated concerns that wolves were having an unacceptable impact on elk populations there.

FWS has announced plans to delist wolves in the northern Rockies region once all states have management plans that meet its approval. However, only Montana has a plan that meets long-term wolf conservation objectives. Idaho and Wyoming remain hostile toward wolves. Until all factors that threaten long-term wolf viability are resolved, it is premature for FWS to delist wolves in this region.





# The Great Lakes

	Minnesota	Wisconsin	Michigan
<b>Size of Area</b>	33,433 sq. mi.	Primary: 5,610 sq. mi. Secondary: 4,935 sq. mi.	Upper Peninsula: 11,152 sq. mi.; Northern Lower Peninsula: 848–3,088.8 sq. mi.
<b>Primary Wolf Prey</b>	White-tailed deer, moose, beaver	White-tailed deer, beaver	White-tailed deer, moose, beaver
<b>Number of Wolves in Area</b>	1,251-1,400 (recovery goal); 3,020 (2004 population estimate)	300-500 (biological estimate); 425-455 (2005 population estimate)	Upper Peninsula: 800 (biological estimate, 405 (2005 population estimate); Isle Royale National Park: 30 (2005 population estimate); Northern Lower Peninsula: 40-500 (biological estimate)

Sources: Erb and Benson 2004; Gehring and Potter 2005; Huntzinger et al. 2005; Potvin, M.J. 2003; Wydeven et al. 2006





The gray wolf subspecies found in the Great Lakes region, commonly called the eastern timber wolf, once ranged from Minnesota to the Atlantic Ocean and from southern Canada to the Ohio River and perhaps farther south. Wolf recovery in this area has been notably successful. In the 1960s, this subspecies was limited to northeastern Minnesota, where it numbered 300 to 1,000 animals. Today, wolves are thriving in northern Minnesota and have also crossed into northern and central Wisconsin and Michigan's Upper Peninsula. Individuals continue to disperse into areas with suitable habitat, with recent wolf sightings in Michigan's Lower Peninsula and other states in the western Great Lakes region. Gray wolves now total nearly 3,020 in Minnesota, 425 to 455 in Wisconsin and 405 in Michigan.

As a result of this success, FWS has proposed changing federal protections for populations within and immediately surrounding Michigan, Minnesota and Wisconsin. Once federal protections are removed, each state will manage the wolf populations within their boundaries. Each of the states has produced a wolf management plan subject to review by the state agencies every five years. As the plans are revised, it is imperative to maintain policies that help reduce human-wolf conflicts and encourage the use of proactive, non-lethal management tools, while at the same time ensuring ongoing wolf recovery and conservation. These factors must be incorporated into the state's future wolf management plans to encourage tolerance toward wolves recolonizing this region and to promote their long-term viability after federal protections are removed.



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Alpha wolf duo, Minnesota

# The Northeast

	<b>New York–Adirondack Region</b>	<b>Maine, New Hampshire and Vermont</b>
<b>Size of Area</b>	6,083-7,627 sq. mi.	21,426-22,229 sq. mi.
<b>Primary Prey</b>	White-tailed deer, moose (small but recovering population)	White-tailed deer, moose
<b>Number of Wolves Area Could Support</b>	200 (recovery goal); 146-460 (biological estimate)	200 (recovery goal); 488-1,448 (biological estimate)

Sources: Carroll, C. 2003; Harrison and Chapin 1997; Mladenoff and Sickley 1998; U.S. Fish and Wildlife Service 1992





Several studies have shown that suitable habitat and sufficient prey exist for wolves in the swath of New England extending from northern Maine across northern New Hampshire and Vermont to Adirondack Park in northeastern New York (Carroll 2003, Mladenoff and Sickley 1998, Harrison and Chapin 1997, Hosack 1996). These studies suggest that the Northeast could support at least 1,200 wolves and perhaps as many as 1,800.

Considerable debate has centered on whether FWS should relocate eastern timber wolves from Canada to Maine or whether wolves could recolonize the region on their own (Wydeven et al. 1998). Some biologists argue that moose have done it, so wolves can, too. Others point out that the region lacks natural corridors that would allow wolves from north of the St. Lawrence River to move through southeastern Quebec into Maine. Moreover, a strong wolf-hunting and trapping tradition in Canada may impede natural dispersal.

Wolf recovery certainly would take place more quickly if FWS captured gray wolves in eastern Canada and released them in suitable areas in the Northeast (Carroll 2003, Wydeven et al. 1998). Relocating wolf packs from Canada also would reduce the possibility that lone wolves moving into northern Maine and New York on their own might interbreed with coyotes.

Wolf recovery requires public support to succeed. According to a 2002 study conducted in New England, 63 percent of residents surveyed believe it is important to reintroduce the wolf in this region to ensure the balance of nature (Belden,

Russonello and Stewart 2002). Other polls have shown similar results. Defenders and other conservation organizations have long advocated for a careful examination of potential habitat in the Northeast to confirm that social and biological conditions meet the needs of wolf restoration. A 1999 Defenders-sponsored feasibility study in the Adirondacks found that, while Adirondack Park can hold a small number of wolves, the long-term survivability of those wolves—without management intervention—is questionable because regional development is degrading important habitats and the few remaining potential travel corridors to other wolf populations (Paquet, Strittholt and Staus 1999). Uncertainty about the taxonomic status of eastern wolves and coyotes also complicates the situation. Before any wolf restoration efforts can take place in the Northeast, a detailed analysis of the best source population would need to be part of the recovery plan.

Defenders continues to call for a comprehensive recovery plan for this region that evaluates the potential for natural recolonization, explores the biological and sociological issues surrounding wolf restoration and determines the next steps towards recovery. In 2003, Defenders and other conservation organizations petitioned FWS to explore wolf recovery in the Northeast by designating it a separate wolf recovery region that would fully protect wolves under the ESA. Federal involvement is essential to restoration in this region because not a single northeastern state has a plan for restoring wolves nor protections in place should wolves naturally recolonize the region.



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Marcy Dam, High Peaks Area, Adirondack Park, New York



## The Pacific Northwest

	Olympic Peninsula	Washington Cascades	Oregon and Northern California
<b>Size of Area</b>	1,693 sq. mi.	North: 6,156 sq. mi.; South: 2,050 sq. mi.	13,224 sq. mi. (not including Oregon coastal forests)
<b>Primary Prey</b>	Black-tailed deer, Roosevelt elk, mountain goats (alternate prey)	North: black-tailed deer, moose; South: black-tailed deer, elk	Mule deer, Columbian black-tailed deer, elk
<b>Number of Wolves Area Could Support</b>	56-64 (biological estimate)	North: 200 maximum (biological estimate); South: not fully evaluated	1,450+ (biological estimate)

Sources: Carroll et al., 2001; Carroll et al., 2006; Dietz 1993; Hosack 1997; Larsen and Ripple 2006; Ratti et al. 1999

Gray wolves once lived throughout much of the Pacific Northwest, and although the region has lacked a breeding wolf population since the 1930s, many areas of potentially suitable habitat remain. Because of their proximity to wolf populations in British Columbia and Alberta, Washington state's North Cascades and Selkirk Mountains offer some of the greatest potential for natural wolf recolonization (Laufer and Jenkins 1989). In fact, recent research using specially trained dogs and DNA analyses indicate that wolves visit the Cascades more than biologists suspected. In the late 1980s it was determined that several wolf packs denned and raised pups in North Cascades National Park/Ross Lake National Recreation Area on the Canadian border.

Another area once under consideration for potential wolf recovery is Washington state's Olympic Peninsula, particularly the almost-1-million-acre Olympic National Park and adjacent 500,000-acre Olympic National Forest. Although gray wolves from Canada probably could recolonize the Cascades as well as the Selkirk Mountains in northeastern Washington on their own, any wolf recovery in Olympic National Park would require relocating animals. Too many people and too much development in the Seattle-Tacoma area block wolf return to the Olympic Peninsula without human intervention. A feasibility study conducted for FWS by the University of Idaho found that the Olympic Peninsula provides sufficient suitable habitat to support about 60 wolves (Ratti et al. 1999, Hosack 1997). However, restoration efforts are not moving forward for several reasons. These include concerns that proximity to people would inhibit wolf dispersal, that the isolation of the area would limit necessary genetic variability, and that wolves would have impacts on deer and elk herds (see page 9).

Re-establishment of gray wolves in the Cascades and Selkirks in Washington, or migration of wolves out of Idaho

eventually could lead to wolves recolonizing other areas of the Pacific Northwest. Possible sites include the Blue Mountains of southeastern Washington and northeastern Oregon, the Siskiyou Mountains of southern Oregon and northern California, and the northern Sierra Nevada in eastern California. In 1999, a wolf that dispersed from Idaho into eastern-central Oregon was captured by wildlife agencies and returned to Idaho. In 2000, two additional Idaho wolves dispersed into eastern Oregon; one was struck and killed by a car, the other illegally killed by gun shot. Since 1998, state and federal agencies have received several hundred reports of wolf sightings in Oregon that remain unconfirmed.

A study by the Conservation Biology Institute, funded in part by Defenders, indicated that as many as 470 wolves could live in a complex of wild lands that includes the Modoc Plateau and southern Oregon Cascades (Carroll et al. 2001). An Oregon State University graduate student thesis used mapping overlays of various habitat suitability factors to estimate that there is sufficient habitat throughout Oregon—much of it in the Cascades—to support 1,400 or more wolves (Larson and Ripple 2006). A second study by Carroll (2006) also establishes the Cascades as some of the best habitat for wolves in Oregon and calls for road removal on public lands to enhance connectivity between wolves in central Idaho and the Oregon Cascades. Oregon's adoption in 2005 of a stakeholder-developed state wolf conservation and management plan could help provide the protections necessary for assisting the development of a viable wolf population that could serve as a source population for northern California, northern Nevada and northern Utah. The state of Washington has indicated that it, too, intends to develop a state wolf conservation and management plan, which could increase protection for wolves that may disperse into the state from Idaho, Montana or Canada.





# The Southern Rockies

<b>Size of Area</b>	64,401sq. mi. (ecoregion boundaries)
<b>Primary Prey</b>	Mule deer, elk
<b>Number of Wolves Area Could Support</b>	1,000+ (biological estimate)

Sources: Bennett 1994; Carroll et al. 2003; Miller et al. 2003

The southern Rockies in Colorado, southern Wyoming and northern New Mexico offer several potential gray wolf restoration sites, including Colorado’s San Juan Mountains, Flat Tops and Grand Mesa areas. The federal government owns 55 percent of this region that includes 9.5 million acres of roadless areas. Wolf habitat and prey abound. Indeed, Colorado hosts an estimated 292,000 elk, the greatest statewide elk population in the United States and nearly one-third of the nation’s total elk population (Rocky Mountain Elk Foundation 2000). An FWS study completed in 1994 by Colorado State University indicates that Colorado alone could hold more than 1,000 wolves (Bennett 1994, Carroll et al. 2003).

A fourth area in the southern Rockies that shows great promise for supporting wolves is media executive Ted Turner’s Vermejo Ranch, which straddles the Colorado/New Mexico border and nearby Carson National Forest. Turner’s lands exemplify the potential of private landowners to contribute to wolf restoration and the need to develop mechanisms at the state and federal level to encourage more private participation in recovery efforts.

With a new office in Denver, Defenders is poised to support and encourage wolf restoration in the southern Rockies through education, outreach, advocacy and compensation and incentive programs.



© ROBERT WINSLOW

Clear Lake, San Juan National Forest, Colorado





## The Southwest

	<b>Blue Range Recovery Area</b>	<b>Mogollon Recovery Site</b>	<b>Grand Canyon Recovery Site</b>	<b>Patagonia/Atascosa Recovery Site</b>	<b>White Sands Recovery Site</b>
<b>Size of Area</b>	6,745 sq. mi.	4,826 sq. mi.	4,826 sq. mi.+	3,861 sq. mi.	3,964 sq. mi.
<b>Primary Prey</b>	White-tailed deer, mule deer, elk	Elk, deer	Elk, deer	Deer	Mule deer, pronghorn, oryx (introduced)
<b>Number of Wolves</b>	100 (recovery goal); 35-49 (current population)	45-71 (biological estimate of what area could support)	115-187 (biological estimate of what area could support)	Not fully evaluated	20 (biological estimate)

Sources: Bednarz 1989; Carroll et al. 2006; Carroll, Phillips and Lopez-Gonzalez 2005; Johnson, Noel and Ward 1992; Parsons 1995; Sneed 2001; U.S. Fish and Wildlife Service 1996

Prior to European settlement, the Southwest was home to the Mexican wolf, a gray wolf subspecies that ranged from southern Arizona, New Mexico and southwestern Texas to the mountains of south-central Mexico. None has been documented in the wild in the United States or Mexico since an FWS trapper captured four males and a female in Mexico between 1977 and 1980. These animals, the last known wild Mexican wolves in the world, were used to found a captive-breeding program in North American zoos. In 1991, the World Conservation Union declared the Mexican wolf the most endangered wolf subspecies in the world. The union's Wolf Specialist Group declared Mexican wolf recovery the highest priority for wolf conservation worldwide.

In 1982, FWS adopted a recovery plan for Mexican wolves that called for a captive-breeding program followed by reintroduction of captive-born animals to the wild. The plan called for re-establishing a self-sustaining population of at least 100 Mexican wolves in the wild within their historic range. Although FWS spent years considering possible release sites in Arizona, New Mexico and Texas, the agency took no action until a 1993 lawsuit filed by a coalition of conservation groups, including Defenders of Wildlife, prompted FWS to proceed with the reintroduction.

Mexican wolves were first released in the Blue Range Wolf Recovery Area west of the Arizona-New Mexico border in 1998. These wolves immediately demonstrated their ability to adapt and survive. They formed packs, killed elk, established territories and reproduced. However, because of local opposition, the Southwest program differs from other restoration efforts. Wolves here are not allowed to roam outside set boundaries. If they do, they are captured and taken back to the designated wolf area. This undermines the ability of these wolves to expand, disperse

and form stable packs, and frustrates progress toward recovery. Also, the Mexican gray wolf recovery plan has not been updated since 1982, so no goals or milestones exist to guide the program.

Other areas suitable for wolf restoration occur throughout the Southwest. One site, supported by studies sponsored by the Grand Canyon Wildlands Council and Defenders of Wildlife, is the area surrounding the Grand Canyon and the adjacent Kaibab Plateau. Scientific studies have identified the Grand Canyon ecoregion as one of the best places for wolves in the lower 48 states (Sneed 2001; Carroll et al. 2003; Carroll et al. 2006). Wolves dispersing from the Blue Range Wolf Recovery Area could reach the Grand Canyon, although expansion into this region would be greatly accelerated by relocations.

Other potential recovery sites include Big Bend National Park, Black Gap Wildlife Management Area in Texas and the Sky Islands region of southern Arizona and New Mexico. Natural recolonization could support all of these opportunities—if Mexican wolves are reintroduced into suitable recovery areas south of the border. Wolves dispersing from the Blue Range Wolf Recovery Area could also recolonize the Sky Islands region.

Several sites in Mexico show potential for wolf reintroductions. Defenders and Naturalia, a Mexican nonprofit organization, have sponsored studies throughout northern Mexico that substantiate this potential (Araiza Ortiz 2002; Sanchez (in prep.); Servin 1986; Servin 1996; Servin, Martinez-Martin and Peterson 2003). Promising areas include the Sierra San Luis/Sierra Los Azules complex in northwest Mexico, the Sierra del Carmen/Serranias del Burro complex in northeast Mexico, the Sierra Plegada in Nuevo Leon and a large region of northwestern Durango and western Zacatecas. Mexican agencies and nongovernmental interests are monitoring U.S. recovery efforts closely and making preparations for reintroductions in northern Mexico

that could lead to recolonization of Mexican wolves across the border in Texas, New Mexico and Arizona. Habitat connections between northern Mexico and east-central Arizona could allow for dispersal and interbreeding among future populations, increasing the Mexican wolf's chance of long-term survival.

The potential for Mexican wolf populations along the U.S.-Mexico border (and gray wolf populations on the U.S.-

Canada border) requires cooperative management. The most direct means for facilitating cross-border management would be for FWS, through the Department of State, to negotiate treaties with Mexico and Canada that set forth mutual predator-conservation priorities and actions. It is also essential that wolf recovery plans, and these treaties, maintain functional corridors for wolf populations in border regions.





# The Southeast

	<b>Coastal North Carolina</b>
<b>Size of Area</b>	2,656.25 sq. mi.
<b>Primary Prey</b>	White-tailed deer, small mammals
<b>Number of Wolves</b>	220 (recovery goal); 100 (current population estimate)

Source: U.S. Fish and Wildlife Service 1989, 2006.



The red wolf once roamed throughout the southeastern United States as far north as Pennsylvania and as far west as central Texas. Because of its wide distribution, the red wolf played an important role in a variety of ecosystems, from pocosin lowlands to forested mountains.

Persecuted like their gray cousins, by the 1970s red wolves existed only along the Gulf Coast of southeastern Texas and southwestern Louisiana. Gravely endangered, the few remaining red wolves were captured by FWS biologists and brought to the Point Defiance Zoo in Tacoma, Washington, and later to other zoos and captive-breeding facilities, in a last-ditch effort to save the species.

Reintroduction to the wild began in the late 1980s with

a successful but limited release of captive-born red wolves on Bulls Island, part of the Cape Romain National Wildlife Refuge off South Carolina’s Atlantic coast. This experiment was followed by reintroduction of captive-born red wolves in the Alligator River National Wildlife Refuge beginning in 1987 and later in Pocosin Lakes National Wildlife Refuge in northeastern North Carolina. In 1990, FWS adopted a red wolf recovery plan that called for releasing red wolves at three separate sites to create a total wild population of 220 animals while maintaining a captive population of 330 red wolves in at least 30 captive-breeding facilities for future releases. A second reintroduction in 1991 released red wolves in Great Smoky Mountains National Park along the North Carolina-Tennessee

border. However, these animals could not find sufficient food or raise young successfully and were removed from the park in 1998. Currently, nearly 100 wild red wolves roam more than 1.7 million acres in northeastern North Carolina, and 165 red wolves reside in 38 captive-breeding facilities.

Like gray wolves, red wolves face myriad threats to their recovery, including illegal killings, severe weather and deaths by motor vehicles. Current and proposed developments can also harm wolves by degrading their habitat. For example, the Navy recently proposed to develop a jet-landing field in the heart of red wolf territory. Defenders and other conservation organizations challenged the proposal in court because the Navy's environmental review lacked information about the potential impacts of the landing field on wildlife. The courts agreed and the development was temporarily halted. Defenders and others are monitoring the situation as the Navy continues to push for building the landing field.

Hybridization—interbreeding between coyote and red wolf populations—remains a constant threat to the recovery of the imperiled wolf of the Southeast. To minimize hybridization, FWS is intensely monitoring known breeding groups of red wolves. This monitoring program has shown initial promise and must be maintained to ensure the genetic purity of the red wolf population.

Severe weather patterns also threaten red wolf recovery. In September 2003, Alligator River National Wildlife Refuge and the recovery program suffered a direct hit from Hurricane Isabel, resulting in the loss of two red wolves and destroying the Sandy Ridge captive-breeding facility. Future catastrophic weather events could further set back red wolf recovery and remain a constant and uncontrollable threat.

Additional studies have identified numerous potential red wolf recovery areas throughout the southeastern United States that require further evaluation (Carley and Melcher 1983, Van Manen et al. 2000). An attempt in the 1980s to release wolves in Land Between the Lakes failed because FWS neglected to conduct sufficient public outreach to win support prior to announcing the reintroduction plan. As a result, public sentiment swung against wolf restoration. FWS eventually dropped the project, but learned a valuable lesson: Public education and outreach must precede plans to reintroduce the species.

Because human tolerance is key to wolf recovery, Defenders works in partnership with the North Carolina-based Red Wolf Coalition and FWS to educate the public about the benefits of red wolves. In 2005, Defenders commissioned a study of the potential contribution of red-wolf-based ecotourism to economic

development. The results showed that landowners and residents were interested in locally based tourism efforts that would benefit communities and protect the natural beauty of their counties. Tourists also expressed interest in participating in red-wolf-related activities (Lash and Black 2005). These findings spurred Defenders and its partners to create and install six red wolf educational displays on the Outer Banks and in other important tourist areas near red wolf country. The kiosk-style displays present general information about red wolves and promote “howlings,” guided nighttime wolf tracking and listening tours of Alligator River National Wildlife Refuge in the heart of the region's red wolf habitat.



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Captive-bred red wolves, Texas



# Recommendations for Continued Recovery

The recovery goals FWS sets for the wolf or any other imperiled species will, in large measure, determine its long-term viability. In the case of the gray wolf and red wolf, the Endangered Species Act, commonsense and good science require that FWS begin by comparing the historic range of these species with the distribution of remaining suitable habitat. Every effort should be made to restore these species to areas, particularly on public lands, that have sufficient habitat for a population of several hundred wolves or more. Smaller areas and private lands that could help maintain the environmental, ecological or geographical representation of the species or provide for the multiple populations that successful conservation demands should also be considered.

Suitable habitat for gray wolves still exists in parts of Arizona, northern California, Colorado, Maine, Nevada, New Mexico, New York, Oregon, western Texas, Utah and Washington. The goal for long-term wolf conservation should be to continue progress toward recovery where it is already underway and to restore wolves actively to other areas, yielding a representative set of multiple, resilient wolf populations in former habitats. Eventually wolves restored to these core areas could serve as source populations for wolf recolonization and recovery within a region. Gray wolves in Minnesota already have sparked recolonization in Wisconsin and in Michigan's Upper Peninsula. Gray wolves restored to Maine could serve as a source population for expansion into Vermont, northern New Hampshire and northeastern New York. Gray wolves restored to Colorado could lead to recolonization of the southern Rockies. In northwest Montana and central Idaho, gray wolves could recolonize portions of northern California, Nevada, Oregon, Utah and Washington. Of course, connectivity with viable Canadian and Mexican wolf populations must also be maintained.

The decisions FWS and others make during the next few years are critical to this vision of the future of our native wolf species. Defenders urges FWS to build on recent wolf recovery successes and return wolves to additional habitats in which they can still thrive and fulfill a natural and vital ecological role to the benefit of us all. Toward this end, we strongly encourage FWS to adopt the following policies and strategies:

- Ensure ongoing conservation of existing wolf populations in the northern Rockies and Great Lakes states through sufficient federal protections and, when appropriate, adequate delisting plans that guarantee continued recovery under state management.
- Support expansion of existing northern Rockies wolf populations through continued federal protections in neighboring states, such as Oregon, Utah, California and Colorado, that do not currently have wolves but do have suitable habitat and natural prey.
- Restore viable populations of gray wolves in additional suitable areas in the United States, including the Northeast, Pacific Northwest, southern Rockies and Southwest, through active reintroduction or facilitated natural recovery.
- Reintroduce red wolves in at least two additional locations within their historic range in the Southeast.
- Encourage wolf restoration on nonfederal lands by working with Congress and the conservation community to develop incentives for private land-owners and tribal governments.
- Transfer management responsibility for wolves to state agencies once a state has addressed factors threatening wolves and has developed a management plan that demonstrates their continuing commitment to wolf restoration and long-term recovery.
- Work closely with federal and provincial governments in Canada and Mexico to encourage maintenance of corridors for wolf dispersal across international borders.
- Work with the Department of State to negotiate a treaty with Canada and Mexico to provide international protection for wolves and other large predators in North America.



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Gray wolf



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“A portion of our world has been out of balance since their departure; a portion of our world has been restored since their return.”

-Levi Holt  
*Conservationist and Nez Perce Tribe member, on wolves*



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