NATIONAL WILDLIFE FEDERATION®

NORTHEAST

FAIR FUNDING *for* WILDLIFE

Investing in our commitment to save America's endangered wildlife

March 2007

CREDITS

The National Wildlife Federation is America's conservation organization protecting wildlife for our children's future.

FAIR FUNDING FOR WILDLIFE: INVESTING IN OUR COMMITMENT TO SAVE AMERICA'S ENDANGERED WILDLIFE

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COVER PHOTO CREDITS: WOLF/STOCKPHOTO, LYNX/IDFG AND KARNER BLUE BUTTERFLY/USFWS

STOCKPHOTO

What would you pay to see grizzly bears roaming free in the Rocky Mountain West, or to witness a whooping crane migration on the Platte River?

Could you put a price tag on hearing the howl of the gray wolf echo through Michigan's forests, or seeing manatees swim in Florida waters?

How much would you be willing to pay today to ensure your children and grandchildren could experience these same things in their lifetimes?

INTRODUCTION

FUNDING THE ENDANGERED SPECIES ACT: INVESTING IN OUR FUTURE

The need for funding

Polls show that Americans overwhelmingly support the Endangered Species Act. Even so, the Act is chronically under-funded. From candidate conservation to listing, from recovery planning to habitat restoration, and from field surveys to land acquisition, more funding is needed to save America's imperiled wildlife and their habitats.

EYEWIRE/GETTY IMAGES

Just as a car runs better with a new set of tires, a change of fluids, and a full tank of gas, species conservation is enhanced when the full array of Endangered Species "recovery tools" are available. Unfortunately, current funding levels often force wildlife officials to do their essential work on a shoestring budget.

As a result, some of America's endangered plants and animals languish on the brink of extinction. In a recent study published in the peer-reviewed journal *BioScience*, researchers examining the relationship between funding and recovery concluded: "Our current scenario is akin to starving hospitalized patients and then grilling the doctors about why more patients are not recovering."

Only by providing full, fair funding for wildlife under the Endangered Species Act can Americans meet their responsibility to save species from extinction and restore healthy ecosystems.

The National Wildlife Federation estimates that $470 million for 2008, increasing over the next five years to $693 million, is enough to meet this goal.

This is roughly the cost of one cup of coffee ($1.59) per year for each U.S. citizen.

Funding at this level would: Enable the U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) to meet their Endangered Species Act implementation responsibilities.

- These two agencies are charged with implementing the core Endangered Species Act programs, which include listing, consultation, habitat conservation planning, recovery and delisting. They also funnel money to states and landowners working to conserve species on state and private lands.
- Currently, U.S. Fish and Wildlife and NOAA Fisheries receive $407 million for Endangered Species Act implementation and endangered species related grants to states and private landowners.

It is time for America to stand up and invest in our commitment to save America's endangered plants, fish and wildlife.

GLOBAL WARMING:
PUSHING WILDLIFE CLOSER TO EXTINCTION

Global warming is the single most urgent threat to wildlife. The science is clear: global warming is happening now and the burning of fossil fuels is the cause. Unless Americans take action to reduce emissions of global warming pollution significantly by mid-century, future generations will inherit a world far less healthy and with fewer wildlife populations than we have today.

As temperatures increase, local climate systems are being altered in ways that directly affect wildlife. For example, disappearing sea ice in the Arctic directly harms polar bears. Drying forests in the western U.S. leads to pests and fires, harming species like the Canada lynx. Disappearing snow pack leads to reduced summer flows in streams and rivers, harming wild trout and salmon.

Endangered species are particularly vulnerable to the effects of global warming for a number of reasons:

- By definition, endangered species have reduced populations and are therefore also likely to have reduced genetic variability, which may limit their ability to adapt to different climates and habitats.
- Their current habitat range is generally limited to restricted geographical areas, resulting in a greater likelihood that changing conditions would make at least part of their habitat unsuitable.
- Many endangered species are also "specialists" and may depend on the survival of one or a few species as its single food source. If these food sources disappear as a result of global warming, the wildlife that depends on them could likewise disappear.
- A number of endangered species live in areas in which large changes are already occurring, such as the Arctic and coastal or island habitats, placing them on the front line in terms of impacts.

Imperiled plants and animals already struggle to survive habitat loss, invasive species and pollution. The added stressor of global warming will likely push endangered species closer to extinction. Only through a combination of reducing global warming pollution and redoubling our on-the-ground efforts to protect wildlife will we fully preserve America's conservation legacy for our children. Doing one without the other will not get the job done.

STOCKPHOTO

GREG LASLEY, USFWS

In addition to an overall increase in funding for recovery, Congress must pass an Interior Appropriations bill with report language directing federal agencies to incorporate climate science into decisions on management of land, water, and wildlife. As stewards of this land, our federal agencies must begin to account for the effects of global warming in the way they manage our natural resources.

America's Safety Net for Wildlife

For over three decades, the Endangered Species Act has served as America's safety net for wildlife. It has saved hundreds of species from extinction, put hundreds more on the road to recovery and safeguarded the habitats upon which they depend.

The purpose of the Endangered Species Act is simple: to prevent America's native fish, plants and wildlife from going extinct. To do this, the Act is founded on three key elements: identifying and listing species threatened with extinction, designating and protecting habitat essential for their survival and recovery, and restoring healthy populations of the species so they can be removed from the list.

The Endangered Species Act has been 99 percent successful in achieving its primary goal of preventing extinctions. Specifically, 67 percent of species whose condition is known and that have been listed for more than five years are stable or improving.

STOCKPHOTO

SECURING AND RESTORING HABITATS

PHOTODISC

To ensure recovery of threatened and endangered wildlife, the U.S. Fish and Wildlife Service needs to acquire habitat necessary to support current and future populations of listed species. Some of the costs of land acquisition are covered by the Endangered Species Act grant programs discussed above. However, a major expansion of the land acquisition program known as the Land and Water Conservation Fund is also needed. This program, which addresses endangered species and a host of other needs, is outside the scope of this report.

Conservation planning and acquiring habitat alone are not enough to conserve wildlife. Restoration and management measure such as species reintroductions, controlled burns, invasive species removal, and monitoring are also necessary. Funding is needed to carry out these on-the-ground measures to restore and manage ecosystems so they can support healthy populations of threatened and endangered species.

Funding needs for land acquisition and ecosystem restoration and management are in the billions of dollars. In an era where global warming is disrupting entire ecosystems, and considering that ecosystems provide buffers from storms and help safeguard drinking water, such investments will be crucial for wildlife and people.

Benefits of the Endangered Species Act

Safe drinking water, cancer-curing drugs, and tourism jobs are all direct yet often ignored benefits of protecting wildlife and habitat.

For too long, the debate over the Endangered Species Act has focused on the costs and not the benefits of conserving wildlife. Industry claims hundreds of millions of dollars in losses propagate the perception that the Act is an expensive luxury Americans cannot afford.

This argument against the Endangered Species Act is one-sided and false. Losing wildlife to extinction is what Americans truly cannot afford. From providing cures to deadly diseases to maintaining natural ecosystems to improving overall quality of life, the benefits of preserving threatened and endangered species are invaluable.

Protecting habitat provides an array of benefits for people and wildlife. Undisturbed natural areas provide significant economic gains by increasing property values, supporting recreation and tourism industries, recharging groundwater, filtering drinking water, preventing erosion and flooding, and providing fish, shellfish and other critical elements of the food supply. Because these benefits do not come with a fixed price tag, they are often left out of current economic analyses of preserving wildlife and habitat.

De-emphasizing the benefits and overstating the costs of protection undermines efforts to protect wildlife. In contrast, providing funding support for the Endangered Species Act is an investment in the future.

Healthy populations of fish, plants and wildlife mean healthy rivers, lakes, grasslands, beaches and forests. For people, this means a healthier and safer America.

Regional Stories

Day in and day out, the Endangered Species Act is working to protect the wildlife that defines America. While most people are familiar with the "big" success stories (following pages), many other untold stories are unfolding in people's backyards.

STOCKPHOTO

The selected showcase species highlighted in this report demonstrate the effectiveness of the Endangered Species Act when it is backed with strong community support for recovering species and with resources dedicated to making recovery happen.

The success that the Endangered Species Act has achieved on a limited budget should give impetus to Congress to provide more resources for restoring all of America's threatened and endangered species and the places they call home.

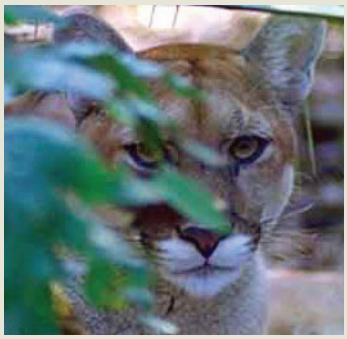
The Endangered Species Act:

Recovering the plants, fish and wildlife that define America

COMSTOCK

BALD EAGLE

In the 1960s, a mere 500 bald eagles could be found soaring across America's lower forty-eight states. Populations plummeted to that level due to DDT use and direct take by farmers, ranchers and others. Thanks to the protections afforded by the Endangered Species Act, bald eagle numbers have rebounded to more than 7,000 breeding pairs of bald eagles today. Captive breeding programs, habitat protection, and a ban on DDT contributed to the successful recovery of this American symbol.



SFWMD

FLORIDA PANTHER

A 1989 census indicated that the Florida panther population had dropped to between 30 to 50 individuals. This decline was the result of habitat loss, degradation and fragmentation. Today, the species population is still below 100 individuals, but without Endangered Species Act protections the panther would likely be extinct. These protections include captive breeding, habitat protection, wildlife underpass construction and the introduction of Texas cougars to prevent inbreeding.

STOCKPHOTO

GRAY WOLF

Gray wolves once ranged across the entire North American continent. However, as a result of poisoning and trapping by ranchers, farmers and government agents, by the mid-20th century, only a few hundred of the species remained in the entire lower 48 states. Today, thanks to Endangered Species Act protections, more than 2,500 wolves reside in Minnesota, roughly 500 wolves in Wisconsin and Michigan and another 500 individuals in western states. The gray wolf's success is a result of Endangered Species Act-stimulated efforts such as public education about the species, habitat restoration, wolf introduction into various areas and compensation of ranchers for livestock killed by wolves.

STOCKPHOTO

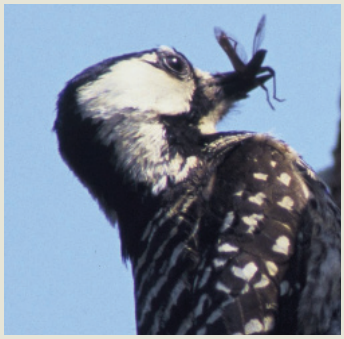
GRIZZLY BEAR

Within the lower 48 states, grizzly bear populations have been reduced to a mere two percent of their former range due to a combination of excessive hunting, conversion of habitat to human uses and fragmentation of habitat caused by such things as extensive networks of logging roads. Grizzly bears were brought under federal management when they were listed under the Endangered Species Act in 1975. At that time fewer than 250 bears occupied the Yellowstone area. Since then, the coordinated efforts of state and federal agencies, conservation organizations and private citizens have increased this population to more than 600 bears. In addition to the Yellowstone grizzlies, approximately 600 bears occupy habitat in the lower 48 states, including portions of Glacier National Park and adjacent areas in Montana and in northern Washington adjacent to the Canadian border.

IDFG

PEREGRINE FALCON

A 1964 survey found that peregrine falcons did not inhabit a single cliff in the eastern United States or Canadian maritime provinces. By 1970, a mere 10 to 20 percent of the historical falcon population remained, due to egg and nestling collection, intentional shooting and DDT use. Endangered Species Act protections for the falcon included captive breeding, preventing human disturbances to nesting and protection and enhancement of critical breeding and wintering habitat. As a result, populations are thriving. The species was delisted in 1999 and today there are more than 1,400 breeding pairs of peregrines in North America.



USFWS

RED-COCKADED WOODPECKER

In the 1960s, a study predicted that the red-cockaded woodpecker would become extinct due to logging, deforestation and fire suppression. Fewer than 15,000 of these birds survive in about one percent of its former range. Thanks to the Act, restrictions were placed on habitat destruction and since 1995, more than 500,000 acres of private lands have been enrolled in conservation programs, leading the woodpecker toward recovery.

INDIANA BAT IN NEW YORK AND VERMONT

The Issue

In most of its range this species is declining from loss of winter hibernating sites in caves and mines, but in New York winter sites appear to be less vulnerable. Even so, New York's Indiana bats disperse to other parts of the state and to Vermont in the summer, where tree roosts are vulnerable to cutting and development. Researchers are only now beginning to understand the species summer needs in the Northeast, thanks to research undertaken since 2001.

USFWS

Natural History

Measuring about 3 inches long from nose to tail tip and weighing less than half an ounce, the dark-gray to grayish-brown Indiana bat is one of 45 bat species in the United States and one of nine in New York and Vermont. During winter it hibernates in caves and abandoned mines from Mississippi and Arkansas, north to the Great Lakes and east into Vermont. Since the 1960s, the population has dropped from about 800,000 nationwide to about 390,000. Even in such depleted numbers, the bats consume millions of flying insects, eating about 25 percent of their body weight nightly.

These bats are highly vulnerable because their very restricted temperature requirements limit the number of useful caves, mines and other wintering sites that biologists call hibernacula. If caves are disturbed repeatedly, the bats lose energy to unnecessary arousal and movement, a burden to adults and potentially fatal to young.

New York State is home to about 42,000 hibernating bats. Unlike bats in other parts of the country—which in summer disperse widely from their hibernacula (wintering caves)—Indiana bats in New York go from their winter caves to specific summer roost sites, as research since 2001 has revealed. For example, thousands of bats from New York cross Lake Champlain in summer to roost in trees in Vermont's Champlain Valley. They prefer trees, dead or alive, with shaggy bark or narrow crevices within which they can shelter. More than 250 bats may roost in a single tree. The bats shift every few days from such primary roosts to secondary roosts and back again. Each group of bats may have a circuit of five to eight roosts. Females give birth to single pups in roosts called maternity trees.

Listing

The bat was federally listed in 1967 as endangered under the predecessor law to the Endangered Species Act throughout its entire range.

Management

The U.S. Fish and Wildlife Service and state agencies put management emphasis on protecting the bat's hibernacula. In New York State, the bats winter in caves and in mines dating to the 19th century. The mines are large and remote, so the bats are relatively safe during winter. In the Northeast, bats use summer and maternity roost trees (see above under *Natural History*) that are vulnerable to logging and development. Consequently, protection in the Northeast also has focused on finding and evaluating summer roost sites. Almost all of the roosts are on private land, requiring cooperation with landowners. Roost studies have been a cooperative effort among the U.S. Fish and Wildlife Service, the New York Department of Environmental Conservation, the Vermont Fish & Wildlife Department, various academic researchers and dozens of volunteers from New York and neighboring states.

INDIANA BAT

Funding

Funding from all government sources for Indiana bat recovery nationwide ranks the species number 42 out of 1,311 species, according to the U.S. Fish and Wildlife Service fiscal year 2004 report (the most recent available) to Congress, *Federal and State Endangered and Threatened Species Expenditures*.* Total recovery funding for the bat from all government sources that year was about $4.9 million, with $1 million coming from the Service. **"Recovery for this species is moving in a positive direction," says John Kostyack, director of Wildlife Conservation Campaigns at the National Wildlife Federation.** "To ensure that recovery for this and other species is done efficiently and with speed, Congress should make sure that the Service has the funding it needs to study, monitor and manage listed species."

Despite the bat's high funding rank, the application of that funding is relatively narrow. Most of it goes to protecting species population centers in the Midwest. Research on the summer roosts used by New York's Indiana bats has succeeded because researchers have cobbled together adequate funds and equipment from a variety of sources. Money came from Fish and Wildlife Service grants to New York State and from Fish and Wildlife Service regional office end-of-year funds. Additional money came from a U.S. Geological Survey grant that funded two years of research, from the U.S. Forest Service and from the Department of the Army.

In addition, the research relied on using New York state police airplanes to track bats tagged with radio transmitters. Ham radio operators also volunteered to help track the bats, and more volunteers helped with tagging and studying the bats. The Vermont Fish & Wildlife Department also participated, and the U.S. Fish and Wildlife Service hired seasonal and contract personnel as well.

Local Contacts

Monty Fischer, National Wildlife Federation Northeastern Natural Resource Center, 802-229-0650; Fish and Wildlife Region Five Office, Endangered Species Division, 413-253-8615; Vermont Department of Fish and Wildlife, 802-241-3700.

THREATS FROM GLOBAL WARMING

Global warming is a broad threat because warmer winters threaten to warm up bat caves. According to an Environmental Protection Agency report on global warming, "Higher-than-normal winter temperatures could boost temperatures inside cave bat roosting sites, which has been shown to cause higher mortality due to increased winter body weight loss in endangered Indiana bats (e.g., an increase of 9°F during winter hibernation has been associated with a 42 percent increase in the rate of body mass loss)."

Hibernacula in the warmer parts of Indiana bat range, where the bulk of the animals currently live, will likely become too warm for the animals to tolerate. Without swift and decisive action to stem global warming, the problem may become so severe that none of the occupied hibernacula across the species' range will be suitable for the bats. Biologists do not know if the Indiana bat or components of its summer habitat can adapt to increased warmth by shifting northward in the time needed to do so.

Other Threats

Loss of winter hibernating sites or summer roosting trees to development are the current primary threats to this species. According to the Vermont Fish & Wildlife Department, the state loses about 525 acres of significant habitat yearly to regulated development, which accounts for only a third of total annual development in the state.

Wind-powered turbines may pose a future threat to Indiana bats and other bat species, as well as to birds. Some studies suggest that turbines may account for thousands of dead bats and birds yearly and could become a factor in species' recovery.

* The U.S. Fish and Wildlife *Federal and State Endangered and Threatened Species Expenditures* report incorporates subjective estimates provided by regulated entities without any independent verification and without effort to segregate Endangered Species Act expenditures from other related expenditures. However, for most listed species, no other funding data is available.

LYNX IN MAINE

The Issue

The Canada lynx once ranged throughout the northern tier of states but has declined as a result of habitat loss to agriculture and urban development. Although Maine now harbors the largest lynx population in the East—and quite likely in the Lower 48—the cats are jeopardized by an absence of forest planning on private lands, changing forest practices, pressure to develop remote areas and global warming.

EYEWIRE/GETTY IMAGES

Natural History

Although commonly called the *Canada* lynx, this 20 to 30 pound cat with bobbed tail and tufted ears occurred historically throughout the northern reaches of North America as well as northern Eurasia. Historically, lynx were common in Maine, New Hampshire and the Adirondacks, though their numbers fluctuated greatly, perhaps in synchrony with the 10-year population cycle of their primary prey, the snowshoe hare. At times of peak hare abundance and lynx numbers, the cats sometimes occurred as far south as Pennsylvania.

Lynx are associated with boreal environments (northern forests) and are common in Canada and Alaska. Maine lies on the edge of lynx range in a region where the forest changes from boreal spruce-fir forest to the northern hardwood forest more typical of New England. Prior to 1913, the cat was found throughout Maine except in coastal areas. After that date, it remained most common in forests in the western and northern parts of the state, which today marks the southern limit of its range in the East.

The lynx resembles the bobcat, though the lynx has longer legs, prominent ear tufts and a distinct ruff around the face, with gray rather than the more typically reddish fur of the bobcat. Its relatively large, furry feet adapt it to walking or running on snow. In Canada its primary prey is the snowshoe hare, a species that follows regular 10-year cycles of alternating low and high populations. When hare numbers are up, Canadian lynx populations tend to increase, and when hares die off, the cat dwindles too.

Listing

The U.S. Fish and Wildlife Service in 2000 listed the Canada lynx as threatened in 14 states, including Maine, New Hampshire, Vermont and New York. Maine is the only northeastern state that currently has a breeding lynx population, although a few confirmed sightings of lynx have been reported in New Hampshire.

Management

The Maine Department of Inland Fisheries and Wildlife, University of Maine and the U.S. Fish and Wildlife Service are conducting research, initiated in 1999, to determine lynx status and distribution, to understand the cat's habitat needs better, to document how forest management affects snowshoe hares and lynx, to identify factors that may limit lynx numbers and to help develop techniques for detecting lynx in the Northeast. Research results were provided to the Service as the agency developed critical habitat and

LYNX

recovery plans, so conservation plans would be relevant to lynx in the Northeast. These studies found that a breeding population of lynx inhabited Maine, particularly the northern forests region.

Large-scale clear-cutting in the 1970s and 1980s to salvage spruce and fir trees damaged by spruce budworm created the especially good lynx habitat in Maine today. The regenerating clear-cuts created habitat perfect for snowshoe hares, the main prey of the lynx.

As many as 1,000 lynx may now live in Maine, probably more lynx than ever before in state history. Lynx habitat in Maine covers 6.5 million acres, an area in the northern part of the state roughly the size of Massachusetts.

Public outcry against large clear cuts in Maine has led to regulations limiting clear-cutting and stimulated the local forest industry to adopt "partial harvesting," a logging method in which only selected individual trees are removed from an area over a period of years. Biologists are uncertain whether the adoption of extensive use of partial harvesting will create the quality and quantity of habitat lynx needed for recovery. Recent research suggests that lynx in northern Maine are not attracted to landscapes dominated by partial harvests, in which snowshoe hare densities are substantially lower. (It should be noted that clear-cutting in drier parts of the nation, such as the West, probably would not benefit lynx as it does in Maine, where forests regenerate more quickly).

Biologists in Maine are considering the use of lynx and pine marten, an arboreal weasel, as "umbrella species," the management of which yields protection for other species using the same habitat. The lynx is an umbrella species for wildlife that use young forest, including moose, chestnut-sided warblers and woodcock. The pine marten serves as an umbrella species for plants and animals that thrive in forests more than 35 years old.

The U.S. Fish and Wildlife Service is encouraging landowners to incorporate forest-management systems using the lynx and pine marten to provide a balance of regenerating and mature forest. The agency can provide private landowners with help in managing forests for lynx, under the U.S. Fish and Wildlife Service Landowner Incentive Program and the Safe Harbors Program, both of which provide incentives for landowners who manage habitat in a way that protects endangered species. For example, three landowners recently enrolled 500,000 acres in the new Healthy Forest Reserve Program and committed to developing forest management plans for lynx and biodiversity.

In November, the Service designated critical habitat for the lynx. In a controversial move, the agency excluded from the designation all lands in

IDFG

Maine, alleging that voluntary partnerships among private landowners, the state and The Nature Conservancy made unnecessary the need for critical habitat protection under the Endangered Species Act.

The Nature Conservancy has purchased large amounts of forested land in northern Maine for lynx recovery. The Forest Society of Maine also has bought conservation easements in northern Maine and has helped acquire forested lands. Many forest landowners help fund lynx and snowshoe hare research through the Maine Cooperative Forestry Research Unit.

Funding

Since the lynx was listed in 2000, the U.S. Fish and Wildlife Service Northeast Regional Office in Hadley, Maine, has provided several hundred thousand

dollars for state and university lynx research, including about $100,000 for lynx recovery work in 2005. In 2006, $500,000 of Natural Resource Conservation Service funding from the Healthy Forest Reserve Program was spent on landowner incentive programs within Maine lynx habitat.

Funding from all government sources for lynx recovery nationwide ranks the cat at 61 out of 1,311 species, according to the U.S. Fish and Wildlife Service fiscal year 2004 report (the most recent available) to Congress, *Federal and State Endangered and Threatened Species Expenditures*.* Total funding from all government sources that year for lynx recovery nationwide was about $3 million, with $772,000 coming from the Service. "Clearly, the cost of lynx recovery in Maine far exceeds what the Service resources allow the agency to put into it," says John Kostyack, director of Wildlife Conservation Campaigns at the National Wildlife Federation. "Congress needs to ensure that the Fish and Wildlife Service has adequate funding for this and other listed species so the agency can do its work efficiently and with the best interests of listed species in mind."

EYEWIRE/GETTY IMAGES

* The U.S. Fish and Wildlife *Federal and State Endangered and Threatened Species Expenditures* report incorporates subjective estimates provided by regulated entities without any independent verification and without effort to segregate Endangered Species Act expenditures from other related expenditures. However, for most listed species, no other funding data is available.

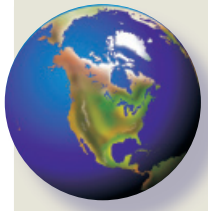
Local Contacts

Peggy Struhsacker, National Wildlife Federation Northeastern Natural Resource Center, 802-229-0650; Maine Department of Inland Fisheries and Wildlife, 207-287-8000; Patrick Strauch, director, the Maine Forest Products Council, 207-622-9288; Bob Wagner, director, Maine Cooperative Forestry Research Unit, 207-581-2903.

Other Threats

Immediate key threats to lynx recovery include collisions with motor vehicles and shooting. The cats also are jeopardized by an absence of forest planning on private lands, changing forest practices and pressure to develop remote areas, including the construction of vacation homes.

THREATS FROM GLOBAL WARMING



Global warming poses a threat to lynx by reducing the deep snows that historically have blanketed Maine's north woods. Lynx are adapted to moving across snow, with their large, heavily furred feet buoying them up almost like snowshoes. Recent studies in Canada suggest that as climate warms, diminished snowfall probably will allow other predators, such as coyotes and bobcats, to compete more effectively against the lynx, which already faces tough survival challenges—in Canada, 70 to 80 percent of lynx do not make it past three years old.

KARNER BLUE BUTTERFLY

IN NEW YORK AND NEW HAMPSHIRE

The Issue

The Karner blue butterfly depends for survival on wild lupine plants, which once thrived in pine barrens and oak savannahs in 12 northern states from New England to Minnesota and in Ontario, Canada. Loss of this habitat to development and fire suppression has driven the butterfly almost to extinction.

Natural History

Today the Karner blue is found only in New York, New Hampshire, Indiana, Michigan, Wisconsin and Minnesota. In the Northeast the main population survives in the sand belt between the Albany pine bush and the foothills of the Adirondack Mountains in New York State, with a population undergoing restoration in the Concord pine barrens of southeastern New Hampshire.

Both male and female have a wingspan of about an inch. The upper side of the female's wings are bluish brown to blue with orange crescents along the lower part of the hind wing, while the male's are violet blue with unmarked narrow black borders.

In April, caterpillars hatch from eggs laid on wild lupine plants the previous year. The caterpillars feed only on wild lupine leaves. In mid May they form a cocoon-like chrysalis from which they emerge as butterflies by the end of May or early June. The adults mate and in June lay eggs on or near wild lupine. The eggs hatch in about a week, and the caterpillars enter the chrysalis stage about three weeks later, appearing as a second generation of butterflies in July. These adults mate and lay a second brood of eggs that does not hatch until the following April. Adults feed on the nectar of a variety of plant species.

Wild lupine grows in open pine barrens and oak savannahs, where sunlight reaches the ground. These habitats often depend on fire to keep them open. When fire is suppressed, as is often the case in areas managed under traditional forestry techniques, the canopies can close, and the lupine dies off. Clearing for agriculture also has destroyed these habitats. For example, development has reduced the Albany pine barrens from a minimum of 25,000 acres to less than 6,000—most of which is seriously degraded.

USFWS

Listing

The Karner blue butterfly was federally listed in 1992 as endangered throughout its entire range.

Management

In 2000, the New Hampshire population—which 20 years ago numbered an estimated 2,000 to 3,000 butterflies—vanished for reasons biologists do not fully understand. Lack of sufficient wild lupine to get the adults through the spring breeding season was likely a factor. Efforts are under way in New Hampshire to restore 300 acres of habitat near the Concord Municipal Airport. Existing habitat has been repopulated with butterflies from New York State. New Hampshire now has 500 to 2,000 Karner blue butterflies, mostly around the airport but also in two other areas to which the butterflies have dispersed.

The healthiest of the New York butterfly habitats is around the Saratoga Airport. Airports and power-line rights of way often provide habitat for this species by keeping wooded areas open and suitable for wild lupine.

The Karner blues in both states suffered in 2005 and 2006 from heavy spring rainfall that reduced breeding activity. However, habitat restoration—including prescribed burns to keep land clear and

KARNER BLUE BUTTERFLY

planting wild lupine—has proceeded vigorously, offering promise for the butterflies in the future. Some indications suggest that the butterfly will soon survive there in good numbers.

The Roger Williams Park Zoo in Providence, Rhode Island, as a participant in the American Zoo and Aquarium Association's Butterfly Conservation Initiative, has helped the project by breeding both butterflies and wild lupine in captivity for reintroduction in the Concord, New Hampshire, area. A school program sponsored by the National Wildlife Federation teaches children about wild lupine and provides them with seeds to plant in appropriate habitat. Other key players in Karner blue recovery are the New York State Department of Environmental Conservation and the Albany Pine Bush Preserve Commission, a legislatively created organization that focuses on recovery and protection of the species and its habitat. More than 20 other species benefit from this work, including the frosted elfin butterfly, spade-foot toad, woodcock, prairie warbler and rufous-sided towhee.

Funding

Funding from all government sources for Karner blue butterfly recovery nationwide ranks the insect at 97 out of 1,311 species, according to the U.S. Fish and Wildlife Service fiscal year 2004 report (the most recent available) to Congress, *Federal and State Endangered and Threatened Species Expenditures*.* Total recovery funding for the butterfly from all government sources that year was about $1 million, with $365,000 coming from the Service. "Cooperation, innovation and a stream of dedicated resources have put the Karner blue butterfly on the road to recovery," says John Kostyack, director of Wildlife Conservation Campaigns at the National Wildlife Federation. "Congress should provide Fish and Wildlife with sufficient resources so they can apply this formula for success to other imperiled species."

Funding for Karner blue recovery in the Northeast has come recently from the U.S. Fish and Wildlife Service Private Stewardship program, from U.S. Forest Service fire-management funds, from U.S. Fish and Wildlife Service state grants to the New York State Department of Environmental Conservation and from The Nature Conservancy, which has purchased habitat for protection.

One critical source of funds is the New Hampshire Army National Guard, which is providing about $1 million for butterfly recovery over the course of a decade. These funds are provided in mitigation for a Blackhawk helicopter hanger that the guard built on 27 acres at the Concord Municipal Airport. This land, too damaged for use by the butterflies, will be replaced with 300 acres of restored land. The funds will also allow the New Hampshire Department of Fish and Game to hire two full-time Karner blue butterfly staff biologists.

Local Contacts

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Other Threats

Habitat continues to be lost to industrial, residential and commercial development, to encroachment of forest on pine barrens and oak savannahs, and to agricultural development.

* The U.S. Fish and Wildlife *Federal and State Endangered and Threatened Species Expenditures* report incorporates subjective estimates provided by regulated entities without any independent verification and without effort to segregate Endangered Species Act expenditures from other related expenditures. However, for most listed species, no other funding data is available.

THREATS FROM GLOBAL WARMING

Global warming poses a threat across the species' range. Unusually mild or virtually snowless winters lower the survival rate of the second brood of eggs, which need a protective layer of snow to mature. Global warming also will bring changes to local weather that could affect the fire regimen indispensable to maintaining this species' habitat and could cause a decline in the lupine plant species essential to Karner blue survival.

NORTHEASTERN GRAY WOLF

STOCKPHOTO

Although the focus of wolf recovery has been in the West and the Great Lakes region, adequate habitat and prey-base exists for wolves within the 26-million-acre Northern Forest, which encompasses much of New England and parts of New York and which was once part of the animal's range. Wolves already are coming from Canada into parts of that region. Experts have documented the accidental killing of endangered northeastern gray wolves in Maine. Presumably they came into New England from southern Quebec, where several wolves have been killed on roads since 1998. As recent as spring 2006, a wolf was killed in Quebec on a highway that probably serves as a travel corridor for wolves dispersing into the United States.

The U.S. Fish and Wildlife Service, however, has no plan to initiate or fund active wolf recovery in the Northeast. Instead, the Service is restricting it northeastern wolf activity to monitoring wolves found in the region. Even this monitoring is handled by non-Fish and Wildlife Service staff. Challenged with budget cuts, staff shortages, the remote northern location of wolf sightings and strict time limits for responding to reports of wolves, the U.S. Fish and Wildlife Service and the state agencies are relying on National Wildlife Federation staff and trained tracking volunteers to take the lead in following up on wolf sightings.

The National Wildlife Federation gains the most valuable information about wolf movement by involving citizens living in and around communities identified as key locations for re-colonizing wolves, such as Pittsburg, New Hampshire, and Rangely and Statton, Maine. The U.S. Fish and Wildlife Service and state wildlife agencies have helped the National Wildlife Federation to develop a rapid-response project for speedy follow up on wolf sightings. Tracking surveys also are certain to be major factors in the eventual success of wolf recovery in the Northeast. "Ideally the Service should be applying the full power of its professional biologists to wolf recovery, but the money to allow the Service to do this simply isn't there," says Peggy Struhsacker, wolf project leader at the National Wildlife Federation. "Certainly private individuals can never undertake reintroduction, a necessary part of wolf recovery in the Northeast."

National Wildlife Federation's mission is to INSPIRE Americans to PROTECT WILDLIFE for our CHILDREN'S FUTURE.

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