U.S. Fish & Wildlife Service

Recovering Threatened and Endangered Species

Fiscal Years 2005-2006

From the Director

I am pleased to provide you with our summary of the recovery status of threatened and endangered plants and animals in the United States for Fiscal Years (FY) 2005-2006. This report describes the efforts by the U.S. Fish and Wildlife Service and our many partners in the public and private sectors who help to make recovery possible.

The Endangered Species Act requires all Federal agencies to do what they can to protect and recover endangered and threatened species. Agencies such as the National Park Service, Forest Service, Bureau of Land Management, and Department of Defense administer millions of acres of habitat vital to listed plants and animals.

Within our own agency, the conservation of threatened and endangered species is a Service-wide commitment. The National Wildlife Refuge System and the National Fish Hatchery System, as well as the Environmental Contaminants, Law Enforcement, Federal Grants, and Partners for Fish and Wildlife programs, are among the Service partners in our shared endangered species recovery program.

Outside the Federal family, we depend on strong partnerships with States and Tribes. Also, since approximately two-thirds of federally-listed species occur on private land, non-government organizations, private landowners, and concerned citizens are extremely important partners, as well.

During FY 2005-2006, the recovery progress made by the Service and our partners enabled us to delist the Eggert's sunflower and to propose to delist the Western Great Lakes distinct population segment of the gray wolf and the Yellowstone ecosystem population of the grizzly bear.

For the reporting period, 33 percent of all listed species are reported as stable, 8 percent as improving, and 34 percent as declining. We are uncertain as to the status of 23 percent of listed species. We recognize the need to obtain more information on those species whose status is unknown, as well as the challenges in collecting this information. The other 2 percent are presumed extinct, extirpated from the U.S., or existing only in captivity. During FY 2005, the Service initiated 5-year reviews for 171 species and an additional 252 species during FY 2006. The reviews conducted have required more than a year on average to complete. During FY 2005-2006, we completed 28 comprehensive 5-year reviews on a variety of species. In several instances, these reviews concluded with recommendations to reclassify species from endangered to threatened, or to delist species due to recovery. As more reviews are completed, I am confident that the number of delistings due to recovery will increase.

It can take years, even decades, to reverse the declining trend of a species that is on the brink of extinction and facing overwhelming threats. Although we have a long way to go and a lot of hard work ahead, we are making progress in the conservation and recovery of our wildlife and plants and the ecosystems upon which they depend.

By increasingly taking the collaborative approach – working together with other agencies, private organizations, landowners, and concerned citizens – we can increase the effectiveness of our recovery program, ultimately for the benefit of our trust fish and wildlife resources.

H Dale Hall

Recovering Threatened and Endangered Species

Fiscal Years 2005-2006

Recovery Features

Front Cover: Eggert's sunflower, a plant delisted due to recovery. Thomas G. Barnes @ USDA-NRCS Plants Database
Inside Cover: Hawaiian stilt, a species that is now considered stable. Aaron Nedig/USFWS
Back Cover: Key deer, another stable species. Photo by John Oberheu

The Recovery Process

Conserving endangered and threatened species and the ecosystems on which they depend is the primary purpose of the Endangered Species Act of 1973. The ultimate goal of such conservation efforts is the recovery of these species so that they no longer need the Act's protection.

The Act requires the Secretaries of the Department of the Interior (DoI) and the Department of Commerce (DoC) to develop and implement recovery plans for the conservation and survival of listed species. In turn, the U.S. Fish and Wildlife Service (Service), under the DoI, and the National Oceanic and Atmospheric Administration (NOAA Fisheries), under the DoC, administer the Act. Generally, the Service is responsible for freshwater and terrestrial species, while NOAA Fisheries is responsible for most marine species and anadromous fish (those that go from salt water to fresh water). The Service and NOAA Fisheries also share responsibility for 10 listed species of sea turtles and fish.

Listing Species

Under the Act, if the Service or NOAA Fisheries determines, based on the best scientific and commercial data available, that listing is warranted, any species of plants or animals, except pest insects, can be added to the list of threatened and endangered species. If a species is in danger of extinction throughout all or a significant portion of its range, it is listed as endangered. If a species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range, it is listed as threatened.

A species is placed on the list due to one or more of the following threats: 1) the current or threatened destruction, modification, or curtailment of its habitat or range; 2) overuse for commercial, recreational, scientific, or educational purposes; 3) disease or predation; 4) the inadequacy of existing regulations or laws; and 5) other natural or manmade factors (for example, a small population that is at great risk in the event of a hurricane) affecting its survival.

Recovery Planning

Recovery is the process by which listed species and their ecosystems are restored to the point that they no longer meet the Act's definitions of threatened or endangered (in other words, when the threats have been reduced or removed). A variety of actions may be necessary to achieve recovery, such as habitat restoration or the reintroduction of the species into unoccupied suitable habitat.

Recovery plans are central to the recovery of listed species, but they are not regulatory documents. Instead, they serve as the road map for a species' recovery, laying out where we need to go, how best to get there, how long we think it will take, and how much we think it will cost. Only under certain circumstances (i.e., if a recovery plan will not promote the species' conservation) is a species exempt from the requirement for a recovery plan. The

(Continued on page 6)

Aplomado Falcon Soars toward Recovery

One of our most rare and striking raptors graces New Mexico's skies again following the August 3, 2006, release of 11 Northern aplomado falcons near the town of Truth or Consequences.

The event, which took place on the 350,000-acre Armendaris Ranch, marks new hope for this endangered bird. The falcons were hatched in captivity, and additional captive-bred falcons will be reintroduced annually for the next 10 years.

The falcon release illustrates the power of cooperative conservation action by private, local, state and federal authorities, including the Armendaris Ranch, owned by Ted Turner; the Turner Endangered Species Fund; The Peregrine Fund, an Idaho-based nonprofit; the New Mexico Game and Fish Department; and the Service.

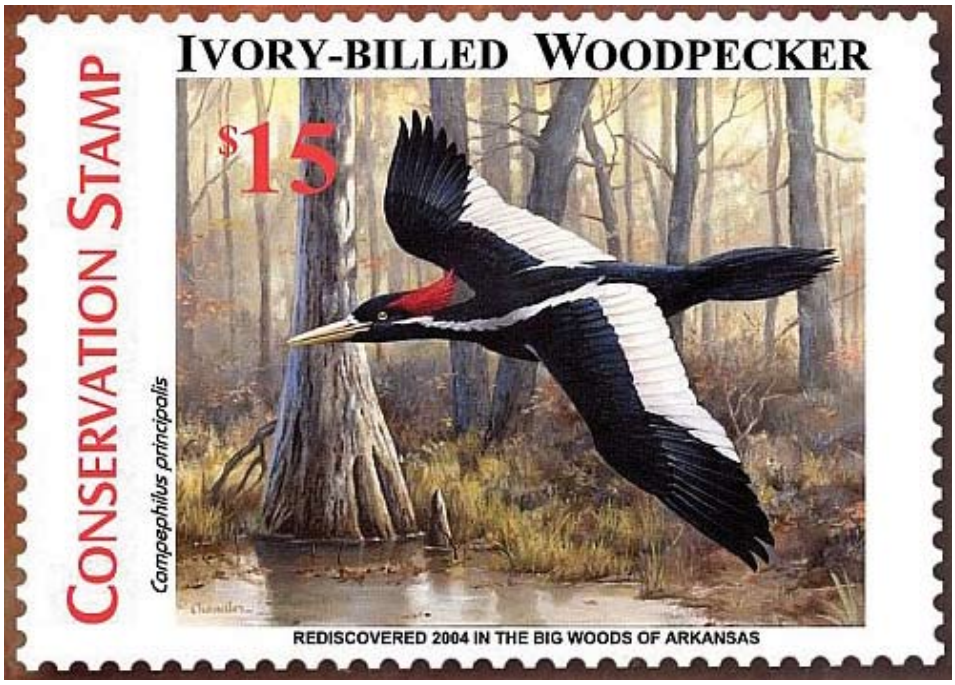
Prior to the 1930s, the Northern aplomado falcon was regarded as fairly common throughout the humid coastal savannas interior grasslands of northern Mexico, southern Texas, New Mexico, and Arizona. The bird declined beginning in the 1930s for undetermined reasons, possibly due to changes in its habitat.

By the mid-1990s, the species had not been sighted in the U.S. for decades, but a small population survived in Mexico. Working together, the Service, The Peregrine Fund, the state of Texas, and many other partners, including private landowners who agreed to have birds released on their property, reintroduced the species to Texas in 1995. The state now has a fast-growing population of 44 breeding pairs.

The Service has worked with private landowners in Texas to reintroduce falcons, using Safe Harbor Agreements that give individuals incentives to participate in endangered species recovery. In New Mexico, which contains more public as well as private lands, the Service took a different approach.

The Northern aplomado falcons in New Mexico are considered an experimental, non-essential population. This method allows the Service to introduce falcons into their historic range using more flexible regulations under section 10(j) of the Act while still ensuring protection for the bird.

Photo by Cal Sandfort, The Peregrine Fund



case of the ivory-billed woodpecker provides an excellent example of this. Before 2004, the last documented sighting of this large woodpecker was in 1942. Over the decades, however, reports of possible ivory-bill sightings continued to come in from several southern forested swamps, so the species was not delisted. Still, the Service determined that developing a recovery plan for a species whose very existence was uncertain would not benefit the species; therefore, it was exempted from recovery planning. The Service focused instead on confirming the woodpecker's existence. After more credible sightings in Arkansas in 2004, the Service reconsidered this exemption and a draft recovery plan is currently under development.

For most species, a recovery outline is developed soon after listing, and this sets the initial direction for conservation efforts and the development of the recovery plan. Recovery plans organize, prioritize, and guide the recovery process. They also establish objective and measurable criteria to determine when a species can be removed from the list, describe the site-specific recovery actions needed to meet the criteria, and identify which parties are responsible for the recovery actions. As new information becomes available, recovery plans may be revised or updated.

Recovery plans are usually developed and carried out by the Service in concert with a variety of federal and state agencies, private organizations, landowners, scientists, and other concerned citizens. We encourage, to the greatest extent possible, stakeholder involvement in recovery planning and implementation.

Recovery plans may be written for just one species, a group of species, or entire ecosystems. They may be written by Service biologists, contracted out to a species expert, or developed by a recovery team. Final plans are not published until after the public has an opportunity to review the draft plan and all comments have been considered. From October 1, 2004, through September 30, 2006 (fiscal years 2005-2006), the Service completed 8 draft, 21 final, and 4 revised recovery plans. Together, these cover 81 species.

Despite the 19 species added to the list between October 1, 2004, and September 30, 2006, the Service has maintained a marked improvement in the proportion of species with final recovery plans. For example, in 1994 only 54 percent of the 893 then listed species had final plans, while by the end of this reporting period 85 percent of 1,269 listed species had final plans. Seven percent of final recovery plans are currently under revision, highlighting the need to keep plans current for species that have been listed for a number of years.

Recovery Teams

Establishing official recovery teams to work on species' recovery planning and/or implementation is not required by the Act, nor is it necessary for every species. However, recovery teams can be very helpful in situations where the species occurs over a wide geographic area, uses a diversity of habitat types, is controversial, or in instances where the recovery plan covers multiple species or an entire ecosystem.

A species that occurs in a small, isolated place would probably not need a recovery team. In such a case, a species expert or a Service biologist could write the recovery plan. Implementation of recovery actions for the species might involve only a handful of people.

Setting Priorities

The first step in the recovery of any listed species is to prevent its extinction. Species subject to the highest degree of threat have the highest priority for development and implementation of recovery plans. They usually need immediate and often intensive intervention just to survive. For example, it may be necessary to capture all of the remaining individuals for captive breeding until the threats in the wild are reduced or eliminated and the species can be reintroduced into formerly occupied habitat. This was the situation facing the California condor in 1987, when the wild population almost died out and the last few wild birds were captured. After years of captive propagation and reintroduction into the wild, the condor population has grown to more than 200 birds in captive breeding flocks and in historical habitats within California, Arizona, and Baja California, Mexico.

We assign a "recovery priority number" to all species to help guide the allocation of funding and staff resources for recovery planning and implementation. This number is based on the degree of threat facing the species, along with the species' potential for recovery and its taxonomic distinctiveness (i.e., whether it is the only species in its genus versus a subspecies of a more widespread species).

SWASD

California condors

A Long Road

A species' decline often occurs over decades or even centuries before listing, and the road to its recovery can be long. Addressing threats that have occurred over long periods typically requires substantial time and resources. Although recovery plans estimate the time and costs associated with addressing known threats, some species also may be faced with new threats even after receiving protection under the Act. For instance, the introduced West Nile virus has decimated many bird populations. Threats are easily magnified simply by the continued decline in species numbers (for example, disease may have a greater chance of eliminating a smaller population). Unfortunately, some threats, such as those posed by invasive, non-native species may continue to increase for some time following a listing.

One of the biggest challenges the Service faces in recovering listed species is the sheer number of species needing help. In addition to the more than 1,200 listed U.S. plant and animal species for which the Service has lead recovery responsibility, there are more than 200 candidates for listing. Thousands of others are considered "species of concern" or "critically imperiled" by states and scientists.

Whenever possible, the Service applies an ecosystem-based approach to conservation, addressing a conservation issue at the landscape level rather than just concentrating on specific problems at hand. Each ecosystem contains an interconnected framework of biological and physical processes. Damage to the framework can affect the ecosystem's ability to support a diversity of life. Natural events, such as hurricanes or volcanoes, and human impacts, such as habitat loss or chemical contamination, can cause the damage. These impacts can present serious problems for species.

Just as the Act makes all federal agencies responsible for the conservation of listed species, all of the Service's programs share in that responsibility. Some examples of the various Service activities benefiting listed species follow.

Photo by Kelly Barr

A golden-cheeked warbler feeds its young.

Recovery is a Service-wide Commitment

Photos by John Klavitter

Kelly Kozar and Michelle Reynolds release translocated Laysan ducks at Midway Atoll NWR.

National Wildlife Refuge System

As of the end of this reporting period, there are 59 National Wildlife Refuges (NWRs) established specifically for the benefit of threatened and endangered species. Listed mammals, birds, reptiles, amphibians, fish, invertebrates, and plants have been the impetus for adding new units to the refuge system. A list of all the refuges established specifically for listed species can be found at www.fws.gov/refuges/habitats/endSpRefuges.html. More than 280 of the Nation's listed species occur on refuge lands, and approximately 500 refuge units provide habitat for listed species. A few examples follow:

Our nation's rarest duck species, the Laysan duck, would not have survived without the refuge system, and refuges are playing an essential role in its recovery. Once occurring widely throughout the Hawaiian Islands, the Laysan duck was reduced to a single population on Laysan Island, which is part of the Hawaiian Islands NWR. In 2004 and 2005, biologists from the Service and the U.S. Geological Survey transported juvenile and prebreeding Laysan ducks to former habitat at Midway Atoll NWR, where the ducks have surpassed all expectations for survival and breeding success. Prior to the ducks' arrival by ship from Laysan Island, refuge staff had removed the non-native rats, restored wetlands, and planted native grass and shrubs with the help of non-profit, agency, and volunteer cooperations. Laysan ducks shortly began breeding at Midway for the first time in perhaps hundreds of years. Biologists hope to repeat this

USFWS

In 1998, the outflow of Jackrabbit Spring at Ash Meadows was choked with non-native tamarisk trees.

USFWS

After a tamarisk-fueled wildfire burned the trees in 2005, the refuge recreated the stream outflow and planted native vegetation.

success at other islands within the refuge. The Hawaiian Islands NWR also provides essential habitat for many other endangered animals and plants.

The Ash Meadows NWR, a system of spring-fed wetlands and alkaline desert uplands in Nye County, Nevada, has the highest rate of endemism of any other area of its size in the continental United States, and the second greatest concentration of endemic species in North America. At least 25 plants and animals occur only within the boundaries of the refuge. Five of these species – four fishes and a plant – are listed as endangered, while an insect and six plants are threatened. A project completed in FY 2006 restored habitat for two of the endangered fish and four of the threatened plant species by removing old impoundments and recreating a stream channel outflow at Jackrabbit Spring. Continuing habitat rehabilitation projects include an effort to control highly invasive tamarisk trees and other non-native species, as well as restoring the historic Carson Slough, once the largest wetland in southern Nevada.

Wetlands Conservation

The Service's National Wetlands Inventory (NWI) provides information on the characteristics, extent, and status of the Nation's wetlands and related wildlife habitats. An estimated 46 percent of endangered or threatened species depend on wetland habitats. Examples of these species include the following:

In the Southwest, the greatest threat facing the threatened Chiricahua leopard frog is predation by the non-native, highly invasive Eastern bullfrog. Using digital maps prepared by the NWI, recovery efforts

are underway to identify remote wetlands where bullfrogs can be removed for restoration of Chiricahua leopard frog populations. These digital maps also cover about 20 percent of the current habitat of the endangered Sonoran tiger salamander, another species vulnerable to bullfrogs and other invasive species. The maps will be used to aid in salamander recovery.

The Midwest is home to Hine's emerald dragonfly, the only dragonfly species protected under the Act. Part of the recovery plan for this species is to conduct surveys in appropriate wetland habitats. Areas targeted for surveys include states where the species currently exists, states where it existed historically, and neighboring states. In 2005, using NWI digital wetlands data, the Service's Columbia, Missouri, Field Office worked with its partner, the Missouri Department of Conservation, to survey potential Hine's dragonfly habitats. To date, the number of known populations has increased from 3 to 27. Once surveying is complete, the next step is to use NWI data to locate possible sites for reintroduction or habitat restoration.

The Upper Tennessee River Basin in the Clinch, Powell, and Holston River drainages supports one of the most diverse freshwater mussel and fish communities in the nation, with over 85 species of mussels and 149 fish species, some found nowhere else. Twenty-six of these mussel and fish species are listed under the Act. The NWI mapped over 3.3 million acres across four states in this mountainous basin to identify habitat threats and high-priority areas for conservation and restoration. The Service is working with other federal and state resource agencies, soil and water conservation districts, and local watershed groups to put this information to use for species recovery.

Jim Rorabaugh

Chiricahua leopard frog

Tom Velat, Dupage County Forest Preserve District

Hine's emerald dragonfly

Richard Biggins

The Upper Tennessee River Basin provides habitat for a wide diversity of mussel and fish species.

USFWS

Jan Dean, Assistant Manager of the Natchitoches National Fish Hatchery in Louisiana, shows off one of the facility's pallid sturgeon.

Photo by M. Simon, MD Env. Service

Delmarva fox squirrel

Greg Nieminen

Swamp pink

Fisheries and Fish Hatcheries

The Service's Fisheries Program is the national leader in many aspects of imperiled aquatic species culture and management, including propagation and rearing, genetics and broodstock management, refugia, nutrition, fish health, and research.

The National Fish Hatchery System consists of 70 hatcheries, 9 Fish Health Centers, 7 Fish Technology Centers, one Historic National Fish Hatchery, and the Aquatic Animal Drug Approval Partnership Program. These facilities propagate aquatic animals and plants to reestablish wild populations, and they provide scientific leadership in development of aquaculture, fish nutrition, and disease diagnostic technologies.

In 2006, the Fisheries Program worked on recovery tasks in approved recovery plans for 70 aquatic species (47 fish species and 23 molluscan, amphibian, and plant species). A few examples of the Program's recovery efforts follow:

The Gila trout, a New Mexico fish listed in 1966 as endangered, was downlisted to the less critical category of threatened on July 18, 2006, as a result of propagation and habitat

Plants also benefit from wetland protection. In the Pocomoke River watershed on the Delmarva Peninsula, the NWI mapped 730,000 acres to help plan for recovery of an endangered plant, the swamp pink, which is associated with the nation's northernmost bald cypress swamps and stands of Atlantic white cedar. The digital data also will help with recovery planning for another resident of this area, the endangered Delmarva fox squirrel.

Bill Roston

Gila trout

restoration by the Fisheries Program and its partners. Mora National Fish Hatchery and Technology Center played a critical role by propagating two important lineages and providing fish for restocking into former habitats. It has also served as a refuge for fish jeopardized by habitat damage caused by forest fires and the resulting erosion. Wildfire impacts on streams during fiscal years 2005-2006, though minimal, reaffirmed the need to emphasize both habitat restoration and sound captive propagation to restock streams for continued recovery.

The Lahontan National Fish Hatchery Complex in Nevada is part of a program that combines fishery management assistance, a hatchery, and a facility that allows migrating endangered fish to bypass a dam. The program conducts critical recovery activities for two listed fish species, one of which is the threatened Lahontan cutthroat trout, Nevada's state fish. This fish was of tremendous commercial and recreational importance until widespread water diversions, stream barriers, and introduced non-native fish reduced it to a small fraction of its former range. The hatchery complex is focusing on watershed connectivity and restoration, and on producing Lahontan cutthroat trout for reintroduction, research, and recreational fishing. It is rearing a unique strain of native Lahontan cutthroat trout for these recovery programs. At the same time, the Marble Bluff Fish Passage Facility at Pyramid Lake, operated by the Service's Nevada Fishery Resource Office, has moved record numbers of cui-ui, an endangered fish, above Marble Dam into their spawning habitat in the Truckee River. The cui-ui is of great cultural importance to the Pyramid Lake Paiute Tribe as well as to the ecology of the lake itself.

© Michael Graybrook

Lahontan cutthroat trout

Craig Springer/USFWS

Lahontan National Fish Hatchery supervisor Jay Bigelow feeds the facility's Lahontan cutthroat trout.

Tim Rothert, Missouri Department of Conservation

Niangua darter

A Higgins eye pearlymussel engraved with a tracking number.

A native of the Midwest, the Niangua darter is a small fish listed in 1985 as threatened due to dam construction, other forms of habitat fragmentation, and elimination of the small pools in which it lives. The Service's Midwest Region staff, working in Missouri with state and local governments and landowners, has conducted 16 recovery-related projects within the watersheds that support the Niangua darter. These projects include fish passage restoration projects, streamside revegetation, non-point source pollution control, and the construction of alternative water sources for livestock.

Although fish hatcheries play a critical role in the conservation and recovery of aquatic species, they support more than fish. Several federal hatcheries are also aiding in the recovery of imperiled amphibian and mussel species. For example, using state-of-the-art propagation techniques, the Genoa National Fish Hatchery in Wisconsin has produced and released an estimated 1.1 million endangered Higgins eye pearlymussels.

In addition, the Genoa facility succeeded in propagating another endangered mussel, the winged mapleleaf, for the first time in 2005. It was a complicated effort. As part of their life cycle, many mussel species must attach themselves during their larval stage to the gills of certain "host"

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USFWS

These tiny mollusks are the first winged mapleleaf mussels ever cultured.

Hatchery Breeds a Rare Toad

The Wyoming toad is a very rare amphibian native to a small area around Laramie. After a population crash, the toad was listed as endangered, and most of its habitat is now protected as part of the Mortenson Lake National Wildlife Refuge. The major factor behind the decline was habitat loss. Irrigation out-competed wetlands for water, and drought made matters worse. Sensitivity to herbicides was a factor, too, as was infection by the chytrid fungus.

As part of the recovery program, toads were brought to the Saratoga National Fish Hatchery in Wyoming for propagation. In 1999, captive breeding began in earnest. Because of its space and expertise, Saratoga has been very successful in its efforts. On average, 6,863 Wyoming toads have been released annually. Recently, Saratoga released tadpoles onto two new private land sites after the owners voluntarily signed Safe Harbor Agreements with the Service.

The hatchery continues to improve its toad husbandry techniques. The 2006 breeding season saw a 17 percent increase in its hatch rate over previous years, and the staff expects the toads to show even greater reproductive success in 2007.

Saratoga is the first facility in the National Fish Hatchery System to hatch and raise an endangered toad. In a hopeful sign, released toads are showing evidence of natural reproduction, a vital step on the species' road to recovery.

USFWS

David Paddock examines a Wyoming toad at the Saratoga National Fish Hatchery.

Tyler Fox

Mussels Return to Restored Habitat

In 1998, the Clinch River in southwestern Virginia turned milky white from the large release of a chemical used in foam rubber manufacture. A tanker truck had overturned and spilled its load into the river, killing an estimated 18,000 freshwater mussels as well as fish, snails, and other aquatic species. Among the dead were 750 individuals of three endangered mussel species: the tan riffleshell, purple bean, and rough rabbitsfoot. The event was one of the most significant kills of endangered species since the Act's passage.

For two years, Environmental Contaminants program staff from the Service's Gloucester, Virginia, Field Office studied sediment toxicity and chemistry within the spill area. Working with Department of the Interior lawyers and Service staff under a provision of CERCLA, the trucking company eventually agreed to a $3.8 million settlement to restore the damaged habitat.

In 2003, Virginia Field Office staff determined that river sediments were once again able to support freshwater mussels. This gave the green light to the mussel release program, which began in the fall of 2005. Local children, media, Service staff, and conservation officials from Virginia Tech University and the Virginia Department of Game and Island Fisheries donned hip boots and waders as they released artificially propagated freshwater mussels into a section of river at Cedar Bluff, Virginia.

This and other mussel restoration projects in Virginia are possible in part by mussel-breeding techniques developed over the past two decades by Dr. Richard Neves of the U.S. Geological Survey's Cooperative Research Unit at Virginia Tech University in Blacksburg, Virginia.

Jess Jones/USFWS

Jess Jones/USFWS

Tan riffleshell

(*left*): Biologists with the Service, U.S. Geological Survey, and Virginia Department of Game and Inland Fisheries release mussels in the upper Clinch River.

fish. Several years ago, biologists from the Minnesota Department of Natural Resources, Macalester College, the National Park Service, and our Twin Cities, Minnesota, Field Office searched the St. Croix River, the last known location where reproducing winged mapleleaf mussels were known to survive. They took two fertilized female mussels to Macalester College, where the mussels released their larvae. The Genoa Hatchery staff, having determined the mussel's host fish species, produced and held 100 catfish to serve as hosts for the mussel larvae.

In May 2005, after the larvae had been attached, the catfish were placed in cages in the St. Croix River. When the fish were no longer needed, they were removed and the mussels grew in the cage on their own. In early October 2005, 11 juvenile mussels were collected from the cage. It was the first time this mussel species had been propagated in captivity. Building on this success, three additional gravid winged mapleleafs were collected in September 2005, and 300 catfish were infested with mussel larvae. By October 2006, 25 winged mapleleaf juveniles were produced.

Dolores Savignano/USFWS

In artificial propagation, these tanks hold fish needed by endangered mussels during their parasitic larval stage.

Restoring Environmental Health

The Service's Environmental Contaminants Program contributes to species recovery by providing technical expertise and scientific data to determine if contaminants are hindering recovery, and by restoring federally listed species harmed by oil spills or hazardous substance releases. When listed species are harmed by oil spills or hazardous substance releases, the Service (typically working with state and tribal counterparts) assesses the damage to determine the extent of injury, and this information is used to determine the type and amount of restoration that is needed. The government then negotiates a settlement with the responsible parties for the cost of restoration projects. Once a settlement has been reached, the government restores the species that were harmed and monitors the results. These activities are called Natural Resource Damage Assessment and Restoration, and they are authorized under the Clean Water Act; the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); and the Oil Pollution Act. Examples of the contributions of this program to recovery include restoration of mussels in the Clinch River, Virginia, and restoration of bald eagles to Catalina Island, California.

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Another important Service effort promoting the recovery of listed species is the Partners for Fish and Wildlife program (next page).

Working with Landowners

Wade Fredenberg

Kurt Fredenberg, son of Service biologist Wade Fredenberg, admires his catch: a 10-pound bull trout. Take of bull trout is allowed if done in accordance with state laws and regulations.

Partners for Fish and Wildlife

Many of our nation's fish and wildlife resources are found on privately owned lands. Because the habitat needs of most endangered and threatened species cannot be met solely on public lands, voluntary partnerships with private landowners are essential. One of the Service's most effective cooperative conservation tools is the Partners for Fish and Wildlife Program.

Partners Program biologists provide technical assistance directly to private landowners on the best and most cost-efficient practices to restore and manage fish and wildlife habitat on their lands. In many instances, the Service also provides cost-share financial assistance through a cooperative agreement. Two of the successful habitat improvement projects benefiting endangered and threatened species are summarized below:

In Montana, the streams that bisect the Two Creeks Ranch provide important habitat for the threatened bull trout and grizzly bear, as well as many other creatures. Poor grazing management in the past affected the riparian vegetation as well as the width, depth, and condition of the streams. The Partners Program has been working with the ranch managers since 1994 on a variety of best management practices that both benefit the ranch and its wildlife. In 2005, the Program constructed 1.7 miles of fence along both Monture Creek and McCabe Creek and developed off-site water for livestock use. This project will significantly improve riparian conditions and water quality while improving livestock distribution and water availability.

Greg Neudecker

A view of Two Creeks Ranch, site of a Partners for Fish and Wildlife project to benefit bull trout and grizzly bears.

© Michael Redmer

The Topeka shiner benefits from a Partners for Fish and Wildlife project in Iowa.

In 2004 and 2005, Partners staff at the Service's Rock Island (Illinois) Field Office worked with the Iowa Natural Heritage Foundation and two private landowners on a habitat restoration project for the Topeka shiner along Cedar Creek in Greene County, Iowa. The project restored the hydrology of an oxbow in the Cedar Creek floodplain and provided permanent off-stream refugia and potential spawning habitat for Topeka shiners. It also reconnected the downstream end of the oxbow to Cedar Creek to allow Topeka shiners to disperse into the watershed.

Safe Harbor Agreements

Safe Harbor Agreements are another tool that provides incentives for landowners to conserve listed species. These agreements provide regulatory assurances for landowners who voluntarily agree to manage their property in ways that contribute to the recovery of a listed species for a specified period of time. In turn, landowners may (if they so choose) alter or modify enrolled property and return it to the originally agreed upon "baseline" conditions at the end of the agreement, even if this means incidentally "taking" the covered species.

For example, landowner Bob Long is enhancing habitat on his 550-acre

Photo by Dr. Michael Forstner, Texas State University, San Marcos

© John Ray NYC 2004

David Wolfe, a biologist with Environmental Defense, surveys Houston toad habitat with rancher Bob Long (right).

east Texas property to benefit the Houston toad, an endangered species. His Safe Harbor Agreement with the Service is resulting in the expansion of Houston toad breeding, foraging, and hibernating habitats. "You can say that I'm a landowner willing to try innovative measures," he says. Environmental Defense, a nonprofit organization, was the key in reaching out to Mr. Long and provided funding for biologists to conduct population surveys for the toad on his property. Now, Mr. Long is helping Environmental Defense and the Service promote Safe Harbor Agreements with other landowners.

U.S. Army Guard Hawaii Environmental Staff (Same on facing page)

Cyanea superba **is an endangered, palm-like tree crowned by a rosette of leaves.**

Working with other Federal Agencies

Congress has made the active participation of all federal agencies in endangered and threatened species conservation a national priority. Section 2(c)(1) of the Endangered Species Act clearly states it is "the policy of Congress that all federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of this Act." Agencies such as the National Park Service, U.S. Forest Service, and Bureau of Land Management administer millions of acres of habitat vital to listed plants and animals. The conservation and recovery of listed species is a priority for these agencies.

One of the Service's most important federal partnerships is with the Department of Defense (DoD). As the guardian of our nation's security, DoD manages about 29 million acres on bases throughout the country to accommodate training and testing needs. At least 320 endangered or threatened species of plants and animals are found on DoD-administered lands. The Sikes Act, DoD's enabling legislation for natural resources management, requires that these lands be managed to support the military mission and, to the extent practical, to conserve these resources for future generations. One provision of the Sikes Act supports endangered species recovery by requiring DoD installations to develop a comprehensive Integrated Natural Resource Management Plan (INRMP), which must be reviewed for concurrence by both the Service and the appropriate state's department of natural

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Army Aids Hawaiian Plant Recovery

The Army Garrison - Hawaii has eight training areas on the islands of O'ahu and Hawai'i (the "Big Island"). These areas support more than 100 endangered species, including birds, several snails, and a large number of plants. Many of the species number fewer than 50 individuals in the wild.

One of the Army's most important conservation measures in the Hawaiian Islands is the collection and propagation of rare plant species. It uses greenhouses to grow more than 2,000 plants each year for placement into natural habitats. The Army also has collected thousands of seeds for safekeeping.

Seed storage ensures that there is material available for reintroduction purposes if a species becomes extinct in the wild. In fact, two plant species, *Cyanea superba* and *Phyllostegia kaalaensis*, have been saved from extinction through these efforts. However, several of the plant species managed by the Army do not produce viable seeds. In these instances, it is necessary to try alternative propagation and storage techniques. The Army has had success with cuttings and micropropagation for many of these species.

The combined method of taking cuttings followed by micropropagation was used for *Phyllostegia kaalaensis*. Cuttings of this critically endangered plant were taken from wild populations in 1996 and 1997. Since that time, all wild populations were extirpated by the effects of non-native feral ungulates, weeds, drought, and possibly disease. The cuttings were preserved as a genetic back-up of plants that were also being propagated in the greenhouse. Without this success, restoration prospects for this species would not be possible.

Army horticulturist Dave Palumbo tends to plants at one of the Army's Hawaiian greenhouses.

resources. These plans are already achieving success. For example, the status of the island night lizard, a species found on the Navy's San Clemente and San Nicolas islands off the southern California coast, is improving substantially. This recovery progress is due in large part to the Navy's implementation of its INRMP.

Working with States

Listed species occur in all 50 states, the Commonwealth of Puerto Rico, and most of the Caribbean and Pacific territories under U.S. jurisdiction. Because the Service cannot recover listed species alone, we rely on the private sector and state resource agencies for their help. The states are actively involved with both recovery planning and implementation.

The Service works with the states and territories to recover species through the Cooperative Endangered Species Conservation Fund grant programs, which are authorized under section 6 of the Act. There are four elements to the program: Conservation Grants, Habitat Conservation Planning (HCP) Assistance Grants, HCP Land Acquisition Grants, and Recovery Land Acquisition Grants.

An FY 2005 Conservation Grant enabled scientists to study the Pima pineapple cactus.

Bill Radke

Conservation Grants

The Service provides financial assistance to states to implement conservation projects for federally listed species. Funded activities include habitat restoration, status surveys, public education and outreach, captive propagation and reintroduction, nesting surveys, genetic studies, and development of management plans. The Service provided $7.3 million in fiscal year 2005 and $9.9 million in fiscal year 2006 for such recovery work as:

- aerial surveys for bald eagle nests, Arkansas - $6,000 (FY 2005);
- assessing baseline ecological conditions in the upper Etowah River for amber, Cherokee, and Etowah darters, Georgia, - $25,000 (FY 2005);
- the Idaho Greater Yellowstone Ecosystem Grizzly Monitoring Project, Idaho - $6,000 (FY 2005);
- geographic distribution and DNA analysis of Pima pineapple cactus, Arizona - $40,920 (FY 2005);
- surveys, assessing impacts of management, and conservation plans for the Mitchell's satyr butterfly, Michigan - $40,455 (FY 2006);
- implementation of a comprehensive management plan for the manatee, Georgia - $22,000 (FY 2006); and
- captive propagation of Guam rails, Guam - $179,312 (FY 2006).

Jim Reid

The state of Georgia received an FY 2006 Conservation Grant to implement a comprehensive management plan for the manatee.

HCP Planning Assistance Grants

The Service provides grants for states to work with local governments to develop regional HCPs that incorporate species conservation into land use planning, thereby promoting recovery. The Service provided $8.5 million in FY 2005 and $7.5 million in FY 2006 to support HCP development.

In FY 2005, the Service awarded an HCP Planning Assistance grant to the Oregon Department of Forestry for the 93,000-acre Elliot State Forest. The conservation strategies developed for this HCP are intended to contribute to the recovery and conservation of the marbled murrelet, northern spotted owl, bald eagle, and coastal coho salmon. Habitat for these species will be improved over time by combining sustainable forest ecosystem management practices and specific strategies for conserving the covered species.

Seth Willey

Salt Creek tiger beetle

In FY 2006, an HCP Planning Assistance grant was awarded to the state of Nebraska to develop an HCP that will cover approximately 200 square miles of saline wetlands. This area encompasses the entire range of the endangered Salt Creek tiger beetle, one of the rarest insects in the United States. The HCP will also cover at least 11 other species. Given the limited range of these saline wetlands in Nebraska, their isolation from other such habitats in the Midwest, and their unique environmental conditions, it is likely that additional rare invertebrate species occur in these saline wetlands and will benefit from the HCP.

HCP Land Acquisition Grants

The Service also provides grants to states for land acquisitions that are associated with approved HCPs. The program promotes recovery by funding land acquisitions that 1) complement private mitigation responsibilities contained in HCPs, 2) benefit listed, proposed, and candidate species, and 3) support critical ecosystems. The Service granted $48.7 million in FY 2005 and $46.2 million in FY 2006 for HCP land acquisition.

Gene Nieminen

Piping plover

The state of Texas was awarded an HCP Land Acquisition grant in FY 2005 to protect 140 acres of habitat for two endangered songbirds, the golden-cheeked warbler and black-capped vireo, in support of the Balcones Canyonlands Preserve HCP. This project will also protect the New Comanche Trail Cave, which provides habitat for two endangered karst invertebrates, the Tooth Cave spider and Bone Cave harvestman. The cave is one of two confirmed localities where the Tooth Cave spider exists and is integral to the recovery of this species. Protection of this tract also provides critical connectivity between previously protected adjacent parcels.

In FY 2006, the state of Michigan was awarded an HCP Land Acquisition grant to acquire inholdings of piping plover habitat along Lake Michigan within the Zertterberg Preserve in support of the Magic Carpet Woods Association HCP. The site is designated critical habitat for the piping

Gil Eckrich

An FY 2005 HCP Land Acquisition Grant to the state of Texas protected habitat for the black-capped vireo and other listed species.

plover, a bird that is listed in the Great Lakes region as endangered, and it was identified in the Pitcher's Thistle Recovery Plan as an acquisition target to recover this threatened plant. A habitat management plan developed jointly by the Nature Conservancy and the Michigan Department of Natural Resources guides protection and management activities to aid in the recovery of both species.

Recovery Land Acquisition Grants

This grant program is aimed at leveraging Service funds with state and partner funds to acquire important habitats for listed species. Because habitat loss is the primary threat to most listed species, land acquisition is often the most effective and efficient means of protecting vital habitats for recovery. Land acquisition is costly, so Recovery Land Acquisition grants are matched by states and non-federal entities to acquire habitat from willing sellers in support of approved recovery plans. The Service awarded approximately $13 million in funding to 28 projects in 20 States in FY 2005, and $14 million in 27 projects in 21 states in FY 2006.

In FY 2005 and FY 2006, projects in the Etowah River Basin of northern Georgia were awarded Recovery Land Acquisition grants. The Etowah and its tributaries drain portions of 11 counties and are home to at least 76 native fish species, making it one of the most biologically diverse river systems in the U.S. But the ranges of many fish have been reduced by dams, storm water runoff, and erosion from certain agricultural practices. In FY 2005, a Recovery Land Acquisition grant provided stream buffers along two miles of the Amicalola River, a very important tributary. Populations of several imperiled fish species are located just downstream of the property. The FY 2006 grant resulted in the protection of 3,296 acres to benefit listed species of fish, including Etowah and Cherokee darters, and conserved over two miles of stream frontage and buffers. The acquisition will complement previous state acquisitions in the area.

Recovery Progress

The ability to fully address species' threats in a recovery plan often requires additional research. For example, some species' life history requirements (such as when breeding is contingent upon rainfall) make monitoring the effects of a threat difficult because it may take several years of research before enough information can be gathered. Given that some species may need additional survey work before a declining, improving, or stable determination can be made, the status of these species are described in this report, and the accompanying technical report, as "uncertain."

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The Palos Verde blue, an endangered butterfly native to southern California, is considered to be improving in status.

To be successful, recovery activities must reverse declines and reduce or eliminate threats. One indicator that a reversal may be underway is when the rate of decline slows or decline halts. Improvement may not be occurring or may not yet be detectable. Where the species numbers and threats remain constant, the species is reported in the accompanying technical report as "stable."

Over time, as species benefit from management and protection efforts aimed at reducing and/or eliminating their threats, and as more information becomes available from surveys and research, increasing numbers of delistings are expected. Although the amount of time for response varies depending upon the species, the reduction and removal of threats should result in an increase in population numbers. It must be noted, however, that the length of time it takes to see a response in numbers following the threat reduction or removal depends on some factors (such as the age at which the species starts to breed) that are beyond the control of the Act and are often unrelated to the amount of financial resources expended. Species that do show a positive response, however, are reported in the accompanying technical report as "improving."

As recovery progresses, it is often possible to downlist a species from endangered to the less critical category of threatened. This determination means that the species is no longer in danger of extinction throughout all or a significant portion of its range. Downlisting objectives and criteria for endangered species are outlined in the species' recovery plan.

When a species is recovered and delisted, federal regulations are removed and management is returned to the appropriate state agency. To delist a species due to recovery, the Service must determine, based on the best scientific and commercial data available, that the species is not in danger of extinction and is not likely to become so in the foreseeable future. The determination is based on an assessment of the same five threat-based factors that caused the species to be listed in the first place. After a species is recovered and delisted, the Act requires the Service, in cooperation with the states, to monitor the species' status for at least five years to make sure it remains secure.

William Campbell

During the FY 2005-2006 reporting period, the Service proposed to delist gray wolves in the western Great Lakes states due to recovery.

The Status of U.S. Listed Species

For the period October 1, 2004, to September 30, 2006 (fiscal years 2005 and 2006), 33 percent of listed species were reported as stable, 8 percent as improving, and 34 percent as declining. We are uncertain as to the status of 23 percent. Additionally, one percent is found only in captivity, and about one percent is believed to be extinct.

Reclassification and Delisting Actions

Successful implementation of recovery actions over time leads to improvement in a species status and eventual reclassification (from endangered to threatened) and delisting. Recovery plan criteria are the measurements by which recovery progress is judged. When an endangered species has successfully met its criteria, it is reclassified as threatened. For example, the Service proposed in 2005 to reclassify the Florida population of the American crocodile as threatened.

We may delist a species under the Act for three reasons: 1) because it is recovered, 2) because it is extinct, and/or 3) because the original data used to list the species were in error (i.e., because there is new information on the species' status, taxonomists have revised the species' classification, or other administrative reasons).

Nineteen species currently on the list of threatened and endangered species, or about one percent, are believed to be extinct or extirpated from the U.S. Reporting species as possibly extinct does not necessarily reflect a failing of the Act, since some of these species may already have been extinct at the time of their listing. Surveying for species that may exist in such small populations that they are believed extinct is highly difficult. In the past, species may have been listed without confirmation that they still existed in case they might be rediscovered. Confirmation of extinction can be equally problematic, and species may remain reported as presumed extinct for a number of years before sufficient surveys are conducted to confirm extinction and before a rulemaking is completed to remove them from the list. Again, the reported rediscovery of the ivory-billed woodpecker in 2004 is one example; it was thought for decades to be extinct. A species cannot be declared extinct until the rulemaking process (a proposed rule, followed by public comment and a final rule) is completed. No species were delisted during the current reporting period due to extinction.

One species was delisted due to a taxonomic revision. The Arizona agave is no longer considered by most

USFWS

The Service proposed in 2005 to reclassify the Florida population of the American crocodile from endangered to the less critical status of threatened due to the reptile's improving status.

Terry Tollefsbal

Dave Imper/USFWS

Kneeland Praire penny-cress

botanists to be a distinct species but a hybrid of two other species; therefore, it was delisted on June 19, 2006.

Recovery is a process that takes time, and reclassifications and delistings due to recovery are relatively infrequent. For species for which the Service has lead, the number of U.S. delistings since the recovery program began is 34. Ten were delisted due to recovery, nine because the species are believed extinct (although several of these probably were extinct at the time of their listing), and 14 have been delisted due to a taxonomic revision or new information. These numbers have changed somewhat from the FY 2003-2004 Recovery Report to Congress due to a change in the way several species from Palau are counted. Palau was a U.S. territory when these species were listed and recovered, so they were previously counted as U.S. listings, but Palau became an independent republic in 1994, so we are no longer counting these species as recovered U.S. species.

Although reclassifications and delistings due to recovery have been relatively infrequent up to this time, the number may be on the rise. During the current reporting period, the Service delisted Eggert's sunflower (see cover photo), and proposed to delist the Western Great Lakes distinct population segment of the gray wolf and the Yellowstone ecosystem population of the grizzly bear (left).

Measuring Recovery Progress

The Act requires the Service to review the status of listed species at least once every five years to determine whether their current classification as threatened or endangered is still correct. In order to allocate more resources to high priority recovery actions, for a number of years the Service relied on the species' status reports compiled in the biennial recovery reports to Congress to serve this function. However, beginning in FY 2005, the Service initiated a more comprehensive review process. Accordingly, the Service initiated five-year reviews for 171 species during FY 2005 and an additional 252 species in FY 2006. Since these five-year reviews are much more comprehensive than the biennial status reports, the reviews

S. Maslowki

Olympic National Park

A five-year status review led to recommendations to upgrade the status of the California least tern (above) from endangered to threatened and to delist the Virginia northern flying squirrel as recovered.

conducted to date have required more than a year on average to complete. During the FY 2005-2006 reporting period, 28 comprehensive five-year reviews were completed on a variety of species, including plants (Kneeland Prairie penny-cress), invertebrates (six Mobile Basin snails), and large vertebrates (northern spotted owl). In several instances, these reviews have concluded with recommendations to reclassify the species from endangered to threatened (California least tern) or delist the species due to recovery (Virginia northern flying squirrel). Over the next four years, the Service intends to complete not only the reviews already initiated but also to initiate reviews for the other species on the endangered and threatened list.

The species status information contained in this report reveal a substantial shift between the FY 2003-2004 and FY 2005-2006 reporting periods. Species reported as having uncertain status decreased from 42 percent to 23 percent. Concurrently, there were increases in species reported as stable, improving, and declining. Thus, this shift stems from a redistribution of species from unknown to known status between the two reporting periods. This change was brought about by two factors: 1) during the FY 2005-2006 reporting period, the Service initiated five-year reviews for 423 listed species and 2) the Service provided more detailed instructions to field staff on how to determine species status for the purposes of this report. While additional changes to the instructions for reporting species' status in the future are not anticipated, the Service will initiate five-year reviews for another 500 species during the FY 2007-2008 reporting period, and many of the reviews that have already been initiated will be completed. Thus, some additional shifting in the proportion of species reported in each status category is anticipated.

Conclusion

The Service will continue to be a leader and trusted partner in fish and wildlife conservation, known for our scientific excellence, stewardship of lands and natural resources, dedicated professionals, and commitment to public service. At the same time, the Recovery Program is evolving to address the many challenges and opportunities associated with the recovery process.

Given the number of species currently listed as endangered or threatened, the difficulties often encountered in reversing a species' decline, and the availability of funding and staff resources, the Service is making significant progress in recovery. We cannot do the job alone, however, and we will continue to refine our use of incentive-based tools for landowners and other partners, include the states and other stakeholders in the recovery planning and implementation process, and explore the opportunity for adding even more management flexibility where appropriate for the species. While proceeding with recovery, the Service will also seek partnerships to conserve species at risk so that listing and subsequent recovery will not be needed in the future.

A historical event took place in 2005 when least Bell's vireos nested in California's Central Valley for the first time in many years. Prior to that, the last confirmed nesting in the valley was in 1919.

Ken Griggs/USFWS

Want more information on a particular endangered species or endangered species recovery effort near you? Please contact the appropriate office below:

Endangered Species Program Contacts

Washington D.C. Office
Endangered Species Program
4401 N. Fairfax Drive, Room 420
Arlington, VA 22203
http://www.fws.gov/endangered/

Acting Chief, Division of Conservation and Classification: Douglas Krofta; 703-358-2105

Chief, Division of Consultation, HCPs, Recovery, and State Grants: Rick Sayers; 703-358-2106

Chief, Division of Partnerships and Outreach: Claire Cassel; 703-358-2390

Region One — Pacific
Eastside Federal Complex
911 N.E. 11th Avenue
Portland, OR 97232-4181
http://www.fws.gov/pacific/ecoservices/

Chief, Division of Endangered Species: Patrick Sousa; 503-231-6158

States/Territories: Hawaii, Idaho, Oregon, Washington, American Samoa, Commonwealth of the Northern Mariana Islands, Guam and the Pacific Trust Territories

Region Two — Southwest
500 Gold Avenue, SW
Albuquerque, NM 87102
http://www.fws.gov/southwest/

Chief, Division of Endangered Species: Susan Jacobsen; 505-248-6641

States: Arizona, New Mexico, Oklahoma, and Texas

Region Three —Great Lakes, Big Rivers
Bishop Henry Whipple Federal Building
One Federal Drive
Ft. Snelling, MN 55111-4056
http://www.fws.gov/midwest/endangered/

Chief, Division of Endangered Species: T.J. Miller; 612-713-5334

States: Illinois, Indiana, Iowa, Ohio, Michigan, Minnesota, Missouri, and Wisconsin

Region Four — Southeast
1875 Century Boulevard, Suite 200
Atlanta, GA 30345
http://www.fws.gov/southeast/es/

Chief, Endangered Species: Gloria Bell; 404-679-7100

States/Territories: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the U.S. Virgin Islands

Region Five — Northeast
300 Westgate Center Drive
Hadley, MA 01035-9589
http://www.fws.gov/northeast/endangered/

Chief, Division of Endangered Species: Marty Miller; 413-253-8615

States: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia

Region Six — Mountain Prairie
134 Union Boulevard, Suite 650
Lakewood, CO 80228
http://www.fws.gov/mountain-prairie/endspp

Chief, Division of Endangered Species: Bridget Fahey; 303-236-4258

States: Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming

Region Seven — Alaska
1011 E. Tudor Road
Anchorage, AK 99503-6199
http://alaska.fws.gov/fisheries/endangered/

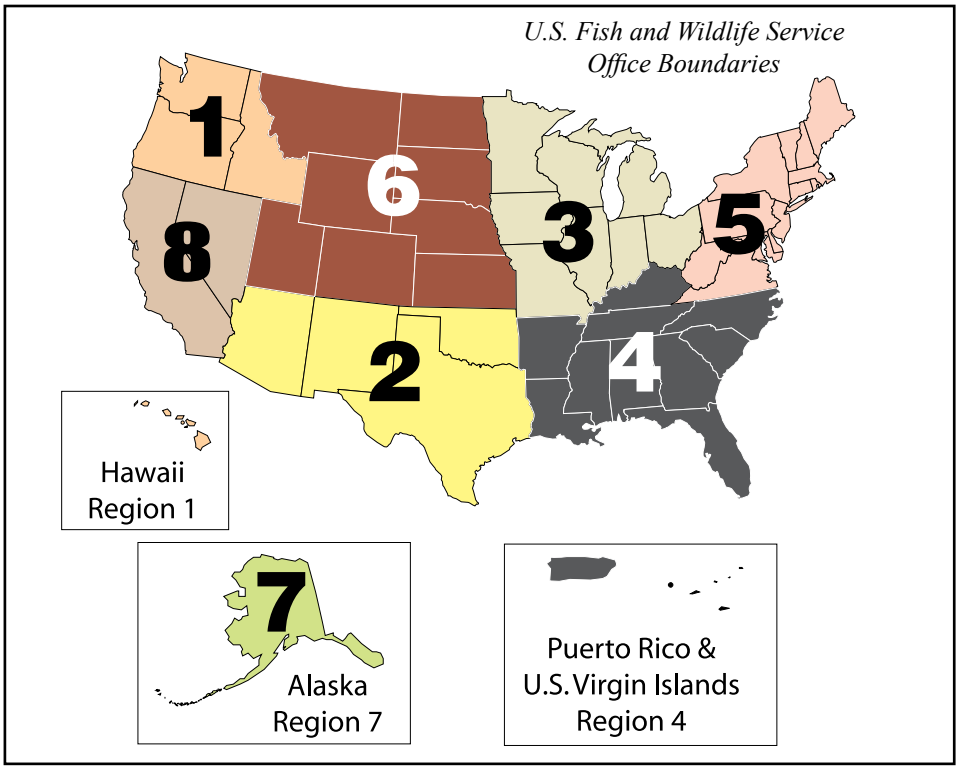
Acting Chief, Division of Endangered Species: Sonja Jahrsdoerfer, 907/786-3323

State: Alaska

Region Eight — California and Nevada
2800 Cottage Way, Suite W2606
Sacramento, CA 95825
http://www.fws.gov/cno/

Chief, Division of Endangered Species: Mike Fris; 916-414-6464

States: Californa, Nevada



The U.S. Fish and Wildlife Service is responsible under the Endangered Species Act for conserving and recovering our nation's rarest plant and animal species and their habitats, working in cooperation with other public and private partners.

U.S. Fish & Wildlife Service
Endangered Species Program
www. fws.gov/endangered
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