

ENDANGERED SPECIES

Technical Bulletin

U.S. Department of the Interior
Fish and Wildlife Service

Emergency Action is Taken to Protect Rare Midwestern Butterfly

The Mitchell's satyr (*Neonympha mitchellii mitchellii*), one of the most geographically restricted butterflies in North America, was listed on June 25, 1991, as Endangered under the emergency listing provision of the Endangered Species Act. New information about the growing threat to this subspecies from collectors made quick action necessary. During the 240-day life of the emergency listing, the Fish and Wildlife Service will proceed with consideration of a rule giving *N. m. mitchellii* long-term protection.

Currently, 15 populations of this non-migratory subspecies are known from southern Michigan and north-eastern Indiana. Fewer than a dozen, however, are considered large enough to remain viable. Biologists speculate that the butterfly's total numbers might not exceed 2,000 adults in good years and fall to fewer than 1,000 in bad years.

The decline of *N. m. mitchellii* from its historical distribution of 32 populations in 4 States is due to overcollecting and habitat loss. This butterfly occurs only in fens, an unusual wetland type characterized by calcareous soils that are fed by carbonate-rich water from seeps and springs. Some of these sites have been converted to agricultural or urban uses. Others have been altered by draining, which promotes the encroachment of brushy vegetation, or have been damaged by all-terrain vehicles. All but three of the surviving populations are on privately owned land.

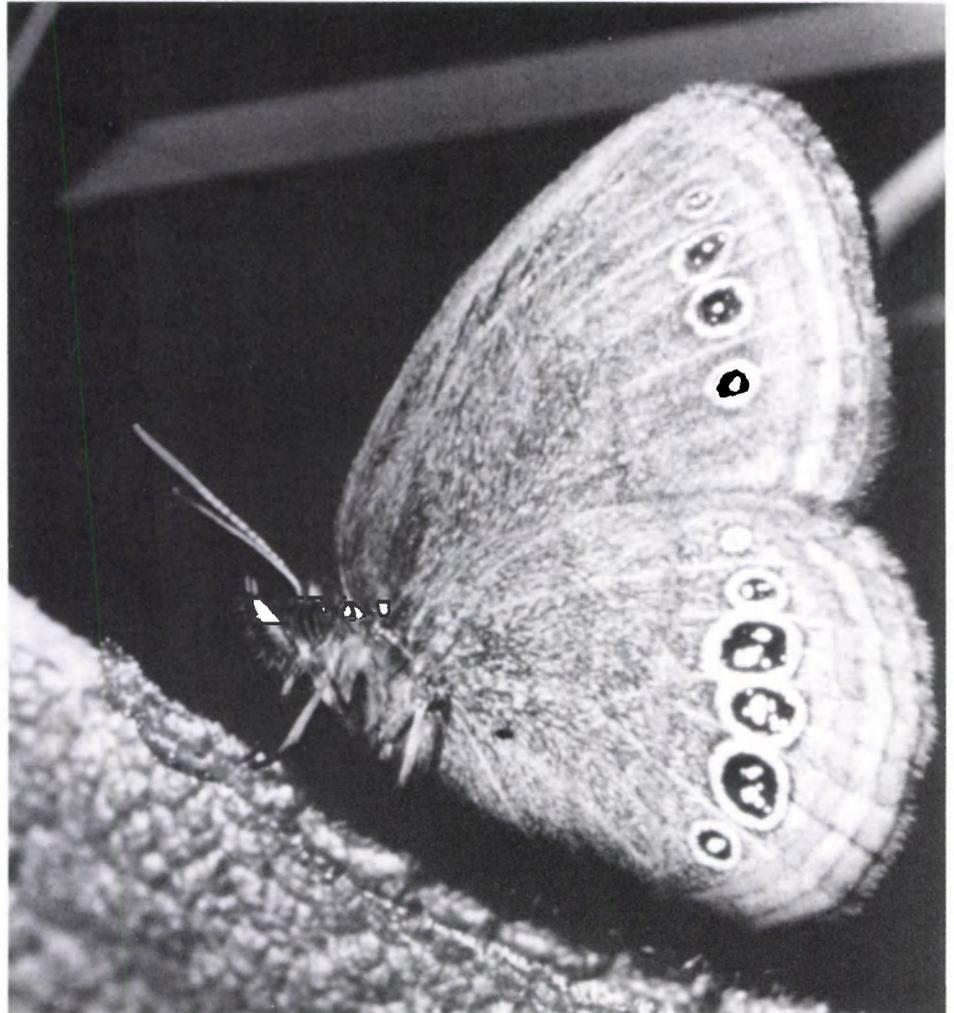


photo by Larry West

The Mitchell's satyr is a brownish butterfly marked with a series of distinctive "eyespot" on the lower surfaces of both pairs of wings. These eyespot (or ocelli) are black with yellow rings and silvery centers. They are accented by two orange bands along the posterior wing edges, as well as two fainter orange bands across the central portion of each wing.

Mitchell's satyr has long been considered a prize by butterfly collectors. Several historical populations in New Jersey apparently were extirpated by over-collecting, and there is evidence of a continuing problem at other sites throughout the subspecies' range. Be-

cause of its relatively sedentary behavior and slow, very low flight, *N. m. mitchellii* is easily caught. The only other North American subspecies of *Neonympha mitchellii*, St. Francis' satyr (*N. m. francisci*), is believed to

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Regional News

Regional endangered species staffers have reported the following news:

Region 1 — On July 16, the California Department of Fish and Game

alerted the Fish and Wildlife Service's Region 1 Environmental Contaminants staff of an oil-well blow-out in Ventura County near Rincon that

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U.S. Fish and Wildlife Service Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, American Samoa, Commonwealth of the Northern Mariana Islands, Guam, and the Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico and the U.S. Virgin Islands. **Region 5:** Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska. **Region 8:** Research and Development nationwide. **Region 9:** Washington, D.C., Office.



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threatened California sea otters (*Enhydra lutris nereis*) and the marine environment in general. While Contaminants staff dispersed to locate the spill, a quick-thinking oil-field worker on site, Mo Valencia, prevented significant damage to a nearby creek and beach by building up a berm of dirt to keep oil from entering the creek, and subsequently, the Pacific Ocean. The spill had the potential to exceed 200,000 gallons (760,000 liters), with significant environmental damage, but was limited to about 3,000 gallons (11,350 l) and minor damage.

* * *

A capture team composed of biologists from the California Department of Fish and Game and the Fish and Wildlife Service traveled to Santa Catalina Island in search of an errant California sea otter, affectionately named Phokey. Meanwhile, at San Clemente Island, 22 miles from Santa Catalina Island, a biologist from the National Marine Fisheries Service reported seeing an otter which, from a description of the tags it was wearing and its unusual behavior in interacting with a group of harbor seals (*Phoca vitulina*), makes the team conclude that Phokey is now residing at San Clemente Island. Capture efforts continue as the animal explores the "no-otter" management zone.

* * *

On July 14, 1991, a railroad tanker spilled about 14,000 gallons (53,000 l) of Vapam, a potent herbicide, into the Sacramento River above Shasta Dam. Vapam is highly toxic to aquatic animals and plants and moderately toxic to the nervous system of mammals and birds. No endangered species are known to have died following the spill, although there was considerable concern for the winter run chinook salmon (*Oncorhynchus tshawytscha*) in the Sacramento River below Keswick Dam.

The spill occurred in the Upper Sacramento River, specifically in the Cantara Loop, which is located at

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Regional News

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proximately 42 miles (67.5 kilometers) above Lake Shasta. This portion of the Sacramento River contained wild strains of several trout species and was highly prized by anglers.

Every macroscopic and probably nearly all microscopic organisms in the Sacramento River between the Cantara Loop and Lake Shasta were killed. Aquatic organisms in the Sacramento arm of Lake Shasta also died, but the full extent of the destruction has not been determined. Aquatic and riparian vegetation in the river is beginning to show signs of deterioration, but the extent of damage will not be known for some time, possibly several months. Preliminary field surveys suggest that the impact of the spill on birds and mammals may center primarily on starvation rather than direct mortality due to the chemical. However, no conclusions can be drawn until carefully controlled field studies have been completed.

The winter run chinook salmon, which is an Endangered population, is in the swim-up fry stage of development in the Sacramento River just below Keswick Dam. There was a concern that if methyl isothiocyanate (MITC), a breakdown product of Vapam, reaches the spawning area, mortality of the fry is very likely. Since data did not exist on the susceptibility of this life history stage to MITC, the California Department of Fish and Game (CDFG), the University of California, and the CDFG Rancho Cordova Pesticide Research Station conducted bioassay studies. In addition, an Environmental Protection Agency laboratory in Cincinnati and the Regional Water Quality Control Board (RWQCB) are conducting standard 3-species bioassays to establish general toxicological guidelines for this chemical.

Two bald eagle (*Haliaeetus leucocephalus*) nests are near the river, and approximately 20 additional birds

range over the lake area. Since bald eagles regularly obtain food by scavenging, CDFG personnel have removed readily accessible concentrations of dead fish. Areas near eagle nest sites have been provided with uncontaminated food. Although eagles have not been sighted actively scavenging, the potential for an adverse impact remains, and the CDFG is closely monitoring activities of eagles in this area. Limited data suggest that secondary bioaccumulation-biomagnification impacts from this chemical are likely to be minimal to birds and mammals.

Data collected by the California Central Valley RWQCB and the Bureau of Reclamation suggest that MITC concentrations are detectable now. The CDFG placed cages of live fish in several areas to monitor the toxicity of the water. Fish in the cages are surviving, and the water collected from the dam stations have non-detectable results for MITC.

* * *

In response to concern about the California gnatcatcher (*Polioptila californica californica*) and a number of other taxa in southern California, the State has initiated a conservation planning effort to address the issue of preserving the coastal sage scrub community. The Service is cooperating in this program, and field staff met with Natural Heritage Program personnel and a scientific advisory panel that will guide the development of planning recommendations.

* * *

An observant San Bernardino County deputy sheriff who stopped a car that did not have current registration discovered 14 desert tortoises (*Gopherus agassizii*) in the trunk. Collected in California's Stoddart Valley, the animals were most likely intended for food or for sale as pets. Deputy Sheriff Robert Woodrum contacted the Bureau of Land Management (BLM) and California Department of Fish and Game (CDFG). Three men in the car were convicted of violating

the State law that prohibits possessing or transporting threatened species of wildlife, fined \$2,000, and sentenced to jail—two for 120 days and one for 100 days. CDFG returned the tortoises to the wild.

* * *

Four motorcycle riders who ran a Thanksgiving weekend Barstow, California, to Las Vegas, Nevada, off-road race in 1990 despite its closure by the Bureau of Land Management (BLM) were fined \$850 each on August 2, following a jury trial in Federal Court in Santa Ana, California. A fifth rider was acquitted. Two other riders pleaded guilty before a U.S. Magistrate and were fined \$250 apiece, while charges were dismissed against two others.

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Subscriptions

The Fish and Wildlife Service is authorized to distribute the *Bulletin* to Federal and State resource management agencies, scientists and organizations we regularly work with, and major libraries. To make the *Bulletin* accessible to everyone else who is interested, the Service has arranged with the University of Michigan to reprint each edition within one of the University's not-for-profit publications, the *Endangered Species UPDATE*, which is available by subscription. In addition to a reprint of the *Bulletin*, each issue of the *UPDATE* contains several pages of related news and a separate feature article. For a 1-year subscription, send a \$23 check or money order (payable to the University of Michigan) to *Endangered Species UPDATE*, School of Natural Resources, University of Michigan, Ann Arbor, Michigan 48109-1115. (The University offers a reduced rate of \$18 for students and senior citizens.)

Japan Agrees to Phase Out Trade in Endangered Sea Turtles

Susan S. Lieberman
CITES Policy Specialist
Office of Management Authority

Japan has agreed to phase out its trade in endangered species of sea turtles by the end of 1992. This action came after Secretary of the Interior Manuel Lujan and Secretary of Commerce Robert Mosbacher certified to President Bush on March 20, 1991, that Japan was diminishing the effectiveness of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) by its continued trade in endangered sea turtles. The certification would have allowed the President, if he chose, to prohibit the importation into the United States of all wildlife products from Japan. Sea turtles throughout the world face many threats, but the most critical danger to many species is the commercial trade in their parts and products.

Six species of sea turtles are listed by the United States under the Endangered Species Act as Threatened or Endangered. The Act protects listed species in U.S. territory and prohibits their import without a permit. CITES, however, is the major international effort for wildlife conservation, with trade restrictions on species listed in different appendices to the treaty. Appendix I includes species in danger of extinction that are or may be affected by international trade. All sea turtles are listed on CITES Appendix I, which prohibits their trade for primarily commercial purposes.

The Japanese Sea Turtle Trade

CITES Parties are allowed to take a reservation to a listing within 90 days of the date when a species is added to an Appendix, or when a country accedes to the treaty. When Japan acceded to CITES in 1980, it took reservations on several species, including hawksbill (*Eretmochelys imbricata*) and olive ridley (*Lepidochelys olivacea*) sea



Hawksbills are endangered by the exploitation of their distinctively marked shell for the manufacture of jewelry, combs, eyeglass frames, and other decorative items.

turtles. As the world's largest consumer of sea turtle parts and products, Japan continued to trade in hawksbills for their shell, known in Japanese as bekko, and in olive ridleys for their raw skin and tanned leather. Bekko is used in making eyeglass frames, jewelry, and decorative items; olive ridley leather is used to manufacture luxury leather goods.

Since 1981, when Japan joined CITES, it has imported the shells of more than 234,000 hawksbill sea turtles from more than 20 different countries. From 1984-1986, imports averaged 20,000-30,000 individuals per year. In 1990, Japan imported the shell of approximately 18,000 hawksbills. One hawksbill contains approximately 1.1 kilograms (2.5 lbs.) of bekko, and the price is now up to about \$225/kg (\$500/lb.). From 1981 to 1989, Japan's self-imposed domestic bekko quota was 30,000 kg (66,150 lbs.) per year, representing up to 30,000 hawksbills. Under the recent agreement, Japan will reduce its imports of hawksbill shell between August 1, 1991, and December 31,

1992, to 7,500 kg (16,500 lbs), an amount that represents nearly 7,500 turtles.

The hawksbill is considered by many scientists to be the most endangered of all sea turtles, with the exception of the Kemp's ridley (*Lepidochelys kempfi*). Experts agree that the most significant factor endangering hawksbill populations is the Japanese commerce in tortoiseshell. While the total world population is not known, from 15,000 to 25,000 female hawksbills are believed to nest annually in more than 50 countries. Populations worldwide are depleted or in decline. Because the species is migratory, with marked individuals having been recorded moving thousands of kilometers, sea turtle trade threatens not only the populations in exporting countries, but all hawksbill populations, including those of the United States.

Monitoring the Trade

The Office of Management Authority (OMA) of the U.S. Fish and Wild-

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Sea Turtle Trade

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life Service monitors the international trade in species protected by CITES to determine whether or not any nation is diminishing the treaty's effectiveness. As part of its ongoing responsibility to implement CITES, OMA has been assessing information on the sea turtle trade, with special attention to the high levels involving Japan. In addition, the Department of the Interior received two petitions in 1990 from conservation organizations (National Wildlife Federation, Center for Marine Conservation, National Audubon Society, Environmental Defense Fund, and Earth Island Institute) asking for certification of Mexico and Japan for trade in sea turtle parts and products.

Although Japan imports hawksbill shell from many countries, the only two reported sources of olive ridley sea turtle skin into Japan in recent years have been Mexico and Ecuador. Both countries, however, have recognized the serious threats of trade to sea turtles and have taken positive steps for their conservation. In May 1990, the government of Mexico banned the "removing, harvesting, pursuing, disturbing, or harming of any of the species and subspecies of sea turtles" in their waters and the destruction of their nests. Until that announcement, Mexico banned most commercial exploitation of sea turtles, except for the olive ridley fishery on the Pacific Coast. That fishery, probably the world's largest, is now closed. The decision was accompanied by a program to study the magnitude of the incidental take of sea turtles during other fishery activities, extension of offshore and beach sea turtle refuge zones, increased scientific studies and other programs aimed at the protection and conservation of sea turtles, and registration of all existing stockpiles of sea turtle products.

The Service has been working closely with Mexico for many years on sea turtle conservation projects, and

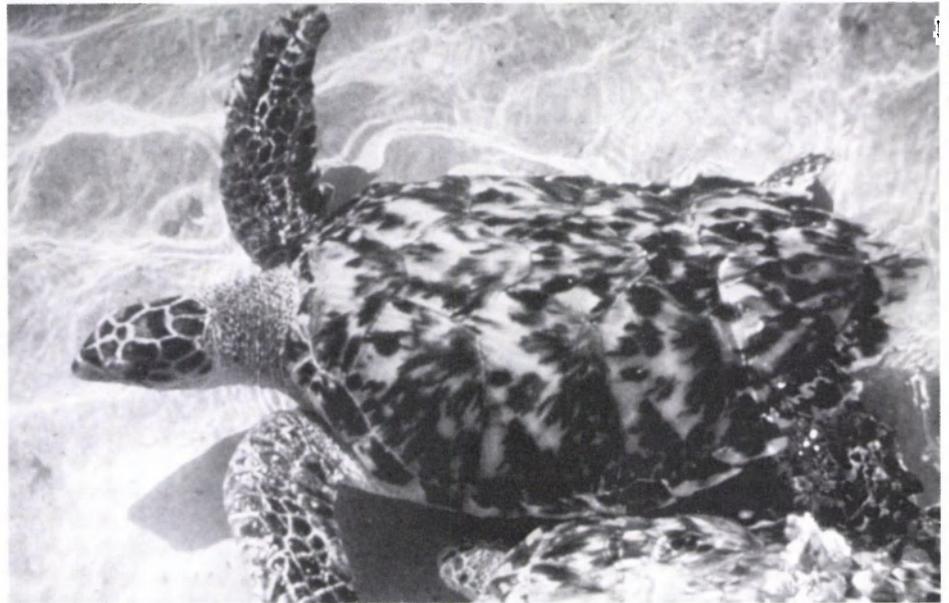


photo by Peter P. Ward

hawksbill sea turtle

supports Mexico's new efforts to protect its sea turtles and other endangered wildlife. The Service is very pleased that Mexico acceded to CITES, effective September 30, 1991, and looks forward to continuing to provide technical assistance to Mexico on CITES implementation. In addition, in July 1990, the government of Ecuador banned the capture, processing, and trade of all sea turtle species.

Pelly Amendment Import Prohibitions

The Pelly Amendment to the Fishermen's Protective Act of 1967 states that when the Secretary of the Interior or the Secretary of Commerce finds that nationals of a foreign country, directly or indirectly, are engaging in trade or taking that diminishes the effectiveness of any international program for endangered or threatened species, the Secretary shall certify that finding to the President. The trade does not have to be in violation of an international convention or a country's domestic legislation in order to constitute "diminishing the effectiveness." The test is the actual trade or take.

Although maintaining a reservation to an Appendix I or II listing is allowed under the provisions of CITES,

when coupled with a continued high volume of trade it undermines the conservation goals of CITES. Japan was found to be engaging in trade with countries that have export bans on sea turtle products, thereby undermining both international and domestic conservation efforts. A critical factor as to whether or not the conservation goals of CITES are being undermined is the biological impact on the species. All biological and scientific data on this point are unequivocal: sea turtles are seriously threatened by continued trade.

Upon receipt of a Pelly Amendment certification, the President may direct the Secretary of the Treasury to prohibit the importation into the United States of wildlife products originating in the offending country. The President is required to notify Congress within 60 days of any action taken pursuant to a Pelly certification. The President has complete discretion over whether or not to impose any import prohibitions.

Seven different foreign countries (some more than once) have been certified under the Pelly Amendment in separate actions by the Department of Commerce, all for either diminishing the effectiveness of the International Convention for the Regulation of

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Sea Turtle Trade

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Whaling, which created the International Whaling Commission, or for failing to enter into and implement adequate agreements required by the Driftnet Impact Monitoring, Assessment, and Control Act of 1987. In addition, Pelly certifications have been considered at other times in the past. Although sanctions have never been imposed by the President, Pelly certifications and the threat of import pro-

hibitions have proven to be effective negotiating and diplomatic tools.

Secretaries Lujan and Mosbacher notified President Bush on July 2, 1991, that they had received commitments from Japan that it will end all hawksbill imports by December 31, 1992, and will sharply reduce its imports until that time. Accordingly, no prohibitions against imports of Japanese wildlife products have been recommended to the President. It is worth noting, however, that Japan's

Pelly Amendment certification for diminishing the effectiveness of CITES will remain in place until Japan withdraws its CITES reservations. Japan is hosting the next meeting of the Conference of the Parties of CITES in March 1992. At the Service's request, the detrimental trade in sea turtles has been placed on the agenda for that meeting, where international attention will be focused on the trade in endangered species.

Regional News

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The annual motorcycle race, which attracted large numbers in the late 1960's and early 1970's, was also held from 1983 to 1989, until BLM closed the area to the race because of the cumulative impact on Federal land and the threat to desert tortoises. BLM has authority under the Federal Land Policy and Management Act of 1976 to restrict activities on public land in order to protect resources, including areas under review for the national wilderness system.

The riders had alerted the media about their intention to proceed with the race. Television cameras recorded nine motorcyclists being arrested in the closed area.

* * *

The Service's Reno, Nevada, Field Office issued BLM a no-jeopardy Biological Opinion for the Nevada 500 Off-Highway Vehicle Races that the High Desert Racing Association has proposed for 1991, 1992, and 1993 through desert tortoise habitat. Three-year take for the 500-mile (800 km) race in Nye and Esmerelda Counties through 85 miles (140 km) of disturbed tortoise habitat and 392 acres (160 hectares) of low-density tortoise habitat is expected to be 12 animals because of injury and mortality and 9 because of harassment.

* * *

Camp Pendleton recently contacted the Service's Regional Environmental

Contaminants staff about a die-off of about 130 birds, including waterfowl and shorebirds, at one of the base's sewage treatment ponds. Contaminants biologists collected birds and blood samples for the National Wildlife Health Center for analysis to determine the cause of the outbreak, suspected to be avian botulism. Fortunately, there have been no signs so far of botulism in a nearby colony of California least terns (*Sterna antillarum browni*).

* * *

Region 2 — Recent recovery efforts for the masked bobwhite quail (*Colinus virginianus ridgwayi*) have focused on reestablishing and monitoring the population at the Buenos Aires National Wildlife Refuge in southern Arizona. Since 1985, the Service has released 9,400 pen-reared juveniles on the Refuge. The reintroduction goal is to establish a self-sustaining population of masked bobwhite quail on the refuge by 1998.

Steve Dobrott, refuge biologist, reports that masked bobwhites appear to be reacting positively to improved habitat conditions resulting from an above-normal amount of rain—27.9 inches (71 centimeters) between June 1990 and April 1991. For the first time, biologists at the refuge documented significant overwintering populations of the species, locating 31 coveys consisting of 333 birds. This is a dramatic increase from the 5 coveys with 50 birds located during the

winter survey of 1989-90.

Biologists who captured, marked, and released 78 masked bobwhite quail, including 8 wild-produced birds, are encouraged about the prospect of significant natural reproduction this summer.

* * *

Region 4 — The last two female Florida panthers (*Felis concolor coryi*) in the southeast portion of the Florida Everglades (including Everglades National Park) died recently. National Park Service staff retrieved the carcasses of Panther 14 on June 21 and Panther 22 on July 22. The causes of death have not yet been determined, but preliminary mercury analyses for Panther 14 were 35 parts per million (wet weight) in the liver and 15 ppm in the blood. This blood level is in the toxicosis range for domestic house cats. Additional samples are being analyzed. No data are available yet on Panther 22, which was in an advanced state of post-mortem degeneration. (*Bulletin* Vol. XV, No. 2, contained a feature on the problem of mercury poisoning in Florida panthers.)

Only two panthers, both male, remain in the southeast Everglades.

* * *

In Cherokee County, Alabama, two Auburn University students have discovered a new population of the Alabama leather flower (*Clematis socialis*), bringing to three the total number of populations of this Endangered spe-

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Listing Proposals — June/July 1991

Four taxa — a bird and three plants — were proposed by the Fish and Wildlife Service during June and July for listing as Threatened. If the proposals are approved, the following will receive the conservation benefits authorized by the Endangered Species Act:

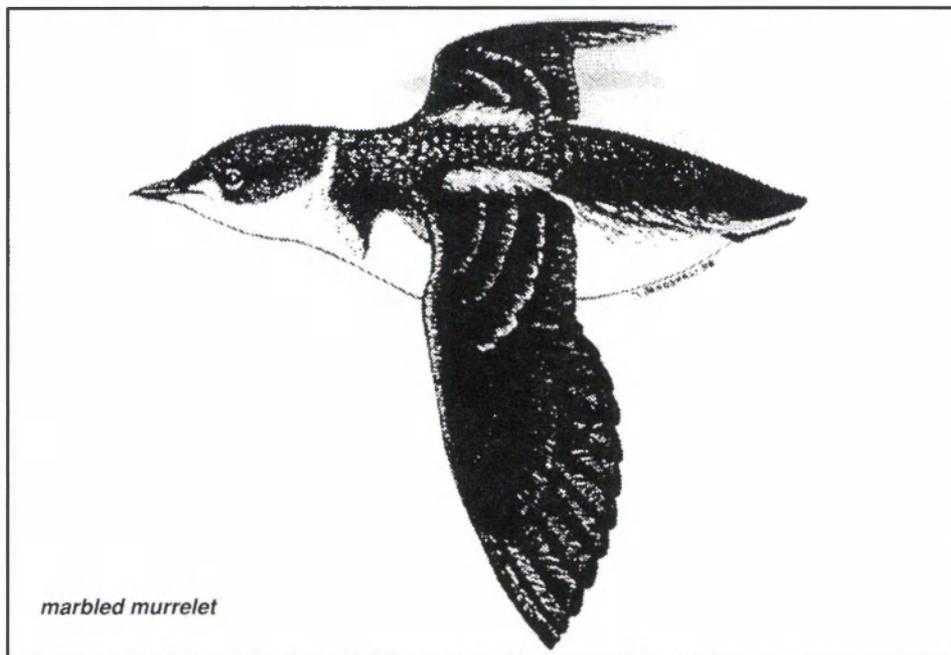
Marbled Murrelet

(Brachyramphus marmoratus)

The marbled murrelet, a robin-sized seabird of the northern Pacific coast, was proposed June 20 for listing as Threatened in Washington, Oregon, and California. Modification or loss of its nesting habitat in coastal old-growth and mature forests was cited as the main reason for the bird's decline.

The North American subspecies of marbled murrelet nests from Alaska's Aleutian Islands, Kodiak Island, and Kenai Peninsula south through British Columbia to central California, with some birds wintering as far south as southern California. Current estimates put the number of adult murrelets at about 5,000 in Washington, 2,000 in Oregon, and 2,000 in California, and all three States recognize this bird as a species of special concern. Populations to the north are larger and are not included in the Service's listing proposal, although in 1990 the murrelet was listed in British Columbia as threatened.

Marbled murrelets employ two different nesting strategies: birds in the Aleutian archipelago are ground nesters, and those from southeastern Alaska southward primarily build their nests on large, moss-covered branches of mature or old-growth conifers. Logging of coniferous forests within the subspecies' range has been extensive. Most of the remaining nesting habitat is on Federal or State land. Numerous other species residing in the old-growth forests of the Northwest are candidates for listing as Endangered or Threatened, and effective



marbled murrelet

habitat conservation could benefit them as well as the marbled murrelet.

Other threats to the marbled murrelet include gill-net fishing and oil spills. One study conducted along Vancouver Island in British Columbia, for example, documented gill-netting as responsible for killing approximately 8 percent of the potential fall population. Although gill-net fishing takes place along the Washington coast, the mortality there is unknown. The vulnerability of murrelets to oil is exacerbated by the fact that they spend most of their time swimming on the ocean surface and feeding in local concentrations close to shore. There is substantial oil tanker traffic in coastal waters throughout the subspecies' range.

The marbled murrelet's low reproductive rate makes it unlikely that populations can recover quickly once depleted. Murrelets may not reproduce every year, and pairs lay only one egg in a nest.

Nelson's Checker-mallow *(Sidalcea nelsoniana)*

This plant, a perennial herb in the mallow family (Malvaceae), is en-

demic to wetlands in the Willamette Valley and adjacent Coast Range of Oregon. Because of its restricted range and extensive habitat modification, *S. nelsoniana* has been proposed for listing as a Threatened species (F.R. 6/7/91).

The Nelson's checker-mallow grows in swales, in wet meadows, and along streams within remnants of prairie grassland habitat. It needs open areas and may not be able to tolerate encroachment by woody plants. Historically, there were six known population centers, but one was extirpated when the site was converted to agricultural use. Four of the five remaining centers are in the Willamette Valley and have been fragmented due to the same cause.

Logging and off-road motorcycling have damaged the single population center in the Coast Range. This center, which is still the species' largest, will be completely inundated if a dam proposed by McMinnville Water and Light is approved. At least part of the site is administered by the Bureau of Land Management, which is required to consult with the Service on activities such as land use permits that may affect listed species.

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drawing by Frank A. Lang

The Nelson's checker-mallow produces clusters of small pinkish-lavender to pinkish-purple flowers at the tops of its 2.5-foot (75-centimeter) stems.

Listing Proposals

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Leedy's Roseroot (*Sedum integrifolium* ssp. *leedyi*)

Leedy's roseroot, a perennial plant in the orpine family (Crassulaceae), is believed to have been widespread during the last ice age. Today, however, it is restricted to a few sites that provide a microclimate probably similar to the conditions that prevailed in much of North America during the Pleistocene. On June 18, this species was



Leedy's roseroot

drawing by Vera Ming Wong, © State of Minnesota, Department of Natural Resources

proposed for listing as Threatened.

Leedy's roseroot depends on an unusual type of habitat: talus slopes or cliffs in which ground water seeping through cracks in the rock maintains a cool, wet environment throughout the summer. Only six populations are known to exist, two in Yates County, New York, and four in Fillmore and Olmsted Counties, Minnesota. Both States already consider the plant endangered.

One Leedy's roseroot site in Minnesota is owned by the State and a conservation easement protects another site in New York. All of the other populations, however, are privately

owned. This rare plant faces threats from groundwater contamination, livestock grazing, natural and human-related erosion, and vegetation clearing associated with residential development at one of the New York sites.

Sensitive Joint-vetch (*Aeschynomene virginica*)

The sensitive joint-vetch, an annual plant in the bean family (Fabaceae), grows to about 6 feet (2 meters) in height, producing a single stem that is sometimes branched at the top. Its small, legume-type flowers are yellow

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Listing Proposals

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with streaks of red and are borne on racemes (elongated inflorescences with stalked flowers). Because of widespread threats to its unique habitat, *A. virginica* was proposed on July 26 for listing as a Threatened species.

This plant occurs only in a rare and specialized ecological community type found a short distance upstream of where certain rivers in the coastal plain of the eastern United States meet the sea. Referred to as freshwater tidal marshes, these communities are close enough to the coast to be influenced by tidal fluctuations, yet far enough upstream to consist of fresh or only slightly brackish water. Plants that grow in this environment are subjected to a cycle of twice-daily flooding that most species cannot tolerate.

The number of *A. virginica* populations has declined significantly throughout the species' range, and this plant has been extirpated entirely

from Pennsylvania and Delaware. At present, there are two known populations in New Jersey, one in Maryland, six in Virginia, and two in North Carolina. Many of the sites where the sensitive joint-vetch once occurred have been dredged, filled, or bulkheaded. Those that remain are potentially threatened by a proposed highway expansion and electrical generating plant in New Jersey; by several proposed residential developments and water supply projects in Virginia; and by other factors associated with increased urbanization of coastal areas, including road construction, commercial development, water pollution, sedimentation, and bank erosion from high-speed motorboat traffic.

* * *

Available Conservation Measures

Among the conservation benefits authorized for Threatened and Endangered plants and animals under the Endangered Species Act are: pro-

tection from adverse effects of Federal activities; restrictions on take and trafficking; the requirement for the Service to develop and carry out recovery plans; the authorization to seek land purchases or exchanges for important habitat; and Federal aid to State and Commonwealth conservation departments that have approved cooperative agreements with the Service. Listing also lends greater recognition to a species' precarious status, which encourages other conservation efforts by State and local agencies, independent organizations, and concerned individuals.

Section 7 of the Act directs Federal agencies to use their legal authorities to further the purposes of the Act by carrying out conservation programs for listed species. It also requires these agencies to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of any Endangered or Threatened species. If an agency finds that one of its activities may affect a listed species, it is required to consult with the Service on ways to avoid jeopardy. For species that are proposed for listing and for which jeopardy is found, Federal agencies are required to "confer" with the Service, although the results of such a conference are not legally binding.

Additional protection is authorized by Section 9 of the Act, which makes it illegal to take, possess, transport, or engage in interstate or international trafficking in listed animals except by permit for certain conservation purposes. For plants, the rules regarding "take" are different. It is unlawful to collect or maliciously damage any Endangered plant on lands under Federal jurisdiction. Removing or damaging listed plants on State and private lands in knowing violation of State law or in the course of violating a State criminal trespass law also is illegal under the Act. In addition, some States have more restrictive laws of their own specifically against the take of State or federally listed plants and animals.



sensitive joint-vetch (*Aeschynomene virginica*)

drawing by Peggy Duke, reprinted from *Herbaceous Plants of Maryland* with permission

Michigan Residents Strongly Support Wolf Restoration

by L. David Mech¹

"The wolf symbolizes to me the beauty and wonder of nature."

Eighty percent of Michigan's deer hunters agree with this Yale University survey statement, according to a recent release by the International Wolf Center in Ely, Minnesota. "Michigan's hunters consistently and strongly expressed the greatest sympathy, concern, ecological appreciation and outdoor recreational interest in the wolf of any group examined," concluded Dr. Stephen R. Kellert, author of the study.

The most important finding of the survey was that a substantial majority of Michigan residents, including deer hunters who have traditionally been seen as anti-wolf, support the proposed restoration of 100 or more gray wolves (*Canis lupus*) to Michigan's Upper Peninsula. This support, moreover, was motivated primarily by the ecological and cultural values of the wolf, and only to a limited degree by its presumed harvest or consumptive-use benefits.

"It appears that the public is starting to learn the facts about the wolf," stated Nancy Gibson, chair of the International Wolf Center. The Wolf Center is a Minnesota non-profit organization that specializes in educating the public about wolves. It helped administer the survey of 900 Michigan residents.

The Kellert study, *Public Attitudes and Beliefs About the Wolf and Its Restoration in Michigan*, was funded by various agencies including the U.S. Fish and Wildlife Service, the U.S. Forest Service, the National Park Ser-



photo by L. David Mech

Strong support for the restoration of gray wolves (such as this animal in northern Minnesota) to Michigan's Upper Peninsula was voiced by local residents during a recent survey.

vice, and the Michigan Department of Natural Resources, as well as the Sigurd Olson Institute.

Michigan contains only a few lone wolves and little evidence of packs, except for Isle Royale in Lake Superior where there are 14 wolves. However, the Kellert survey revealed that 65 percent of the Upper Peninsula's residents favored reintroducing additional wolves to their area. Deer hunters as a group were even more favorable; 81 percent supported reestablishment.

Michigan wildlife agency officials are pleased with this support and believe that it indicates sensitivity to wildlife in general. They note the similarity of support for recent releases of moose (*Alces alces*) and peregrine falcons (*Falco peregrinus*) on the Upper Peninsula.

Plans have not yet been formulated for a reintroduction of wolves into Michigan. However, the strong public support would probably make a release far more successful than the experimental reintroduction of four Minnesota wolves to the Michigan Huron Mountain region in 1974. All 4 transplanted wolves were killed by people within 9 months after release.

The Eastern Timber Wolf Recovery Plan calls for reestablishing wolves in one region outside of Minnesota. The results of the Kellert survey indicate that the Michigan-Wisconsin area may be the prime candidate for this recovery action.

¹ U.S. Fish and Wildlife Service, Patuxent Wildlife Research Center, North Central Forest Experiment Station, 1992 Folwell Avenue, St.

Midwestern Butterfly

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have been collected into extinction since it was discovered at Ft. Bragg, North Carolina, in 1983.

The emergency listing authorizes the Service to enforce prohibitions

against the unauthorized take or sale of *N. m. mitchellii*. In addition, the Service intends to propose long-term protection for the subspecies shortly and to make a final decision before the emergency rule expires. If the butterfly receives permanent protec-

tion, the Service will develop a plan for its recovery. Among the possible recovery actions are the negotiation of easements with landowners to conserve habitat and attempts to establish new populations or augment some of the smaller ones.

Final Listing Action Approved for Four Species

During June and July of 1991, the following species—a mussel, a butterfly, and two plants—were listed for protection under the Endangered Species Act:

Winged Mapleleaf Mussel (*Quadrula fragosa*)

A freshwater clam, this species once occurred extensively throughout the Mississippi, Tennessee, Ohio, and Cumberland River drainages in Ohio, Indiana, Missouri, Tennessee, Minnesota, Nebraska, Iowa, Illinois, Wisconsin, Oklahoma, and Kentucky. It was usually found in medium to large clearwater streams in riffles or on gravel bars. Extensive habitat damage or alteration from sedimentation, pollution, impoundments, and other projects that alter natural flow regimes apparently have eliminated the winged mapleleaf from about 99 percent of its historical range. It is now known only from one location within a 5-mile (8-kilometer) reach of the St. Croix River on the Minnesota/Wisconsin border. A survey by the Wisconsin Department of Natural Resources suggests that the mussel's population has not reproduced since 1983.

The winged mapleleaf mussel was proposed on August 6, 1990, for listing as an Endangered species (see summary in *Bulletin* Vol. XV, No. 9), and the final rule was published June 20, 1991.

Uncompahgre Fritillary Butterfly (*Boloria acrocnema*)

The Uncompahgre fritillary, a small butterfly with black bars criss-crossing

its brownish wings, has the smallest total range of any North American butterfly species. It is restricted to only two known locations, and possibly another two small sites, in the San Juan and Sawatch Mountains of southwestern Colorado. Biologists estimate that fewer than 1,000 of the butterflies remain. Both of the confirmed sites are on land administered by the U.S. Forest Service and the Bureau of Land Management, and current land uses do not appear to be incompatible with the butterfly's habitat. Overcollecting is the main threat; this species has been the subject of intense sampling since it was discovered in 1978.

The Uncompahgre fritillary butterfly was proposed October 15, 1990, for listing as Endangered (see *Bulletin* Vol. XV, No. 11), and the final rule was published June 24, 1991.

Knieskern's Beaked-rush (*Rhynchospora knieskernii*)

An annual plant in the sedge family (Cyperaceae), Knieskern's beaked-rush grows to about 23 inches (60 centimeters) high, has short, narrow leaves, and produces clusters of small brown flowers. Historically, it was found at 38 confirmed sites in New Jersey. Only 27 populations are known to remain, all but 1 of them in the New Jersey Pinelands. The species grows primarily in early successional wetlands within oak/pitch pine forest stands. Because *B. knieskernii* requires open habitat, it is restricted to clearings and disturbed areas. The suppression of naturally occurring wildfires has resulted in the encroachment

of woody vegetation at some sites, rendering them unsuitable for the beaked-rush. This species also is vulnerable to water pollution, activities that change the hydrologic conditions it needs, and the modification of its habitat for agriculture and development.

Knieskern's beaked-rush was proposed August 8, 1990, for listing as a Threatened species (see *Bulletin* Vol. XV, No. 9), and the final rule was published July 18, 1991.

Tennessee Yellow-eyed Grass (*Xyris tennesseensis*)

The Tennessee yellow-eyed grass, a herbaceous perennial in the family Xyridaceae, grows in clumps from fleshy, bulbous bases. Its linear, deep-green leaves grow to about 18 inches (45 cm) high, and small, yellow flowers are borne singly at the tips of slender stalks. This wetland plant grows on seeps and along streams within open or thinly-wooded areas where calcareous rocks are present. Three of the species' 10 historically known sites have been destroyed. Disjunct populations remain in Alabama (1), Georgia (1), and Tennessee (5). Four of the existing populations have declined in recent years due to highway construction and roadside maintenance, over-collecting, logging, sedimentation, gravel quarrying, conversion of habitat to agricultural uses, and vegetational succession.

The Tennessee yellow-eyed grass was proposed February 15, 1991, for listing as Endangered (see *Bulletin* Vol. XVI, No. 3), and the final rule was published July 26, 1991.

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cies. Only about 80 of the plants are known to exist in the wild.

Located on private land, the new population of the Alabama leather flower consists of about a dozen

plants, complementing 15 and 50 at the two other sites in Cherokee County and St. Clair County, respectively.

Searches for new populations are only a part of the Alabama leather flower recovery activities conducted

under the direction of Dr. Robert Boyd of Auburn University. Through the Service's Auburn Cooperative Research Unit, Dr. Boyd and his students are involved in experiments to determine appropriate habitat man-

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agement techniques and reproductive biology studies relating to the plant.

This is the first population of the Alabama leather flower found in the wild since the species was listed in January 1986. The two other populations occur on roadside rights-of-way, where maintenance practices such as herbicide application and mowing pose potential threats to the species' survival. Indirect effects of encroaching residential development are another threat.

* * *

As mitigation for the loss of a diverse mussel bed caused by the construction and operation of a dam on the Ohio River, three power companies have given the Virginia Cooperative Fish and Wildlife Research Unit a \$25,000 grant for research into the feasibility of cryopreservation of freshwater mussel genetic material.

The grant came from a Mussel Trust Fund that the Cincinnati Gas and Electric Company, Columbus and Southern Ohio Electric, and the Dayton Power and Light Company established after the William H. Zimmer Generating Station on the Ohio River began operating.

Cryopreservation has been successfully used to preserve the genetic material of many species and may be the only means of preventing the extinction of some of our most endangered freshwater mussels. Some federally-listed mussels exist only as nonreproducing populations, and other species are so restricted in distribution that a single event, such as a toxic chemical spill, could eliminate them.

Juvenile mussels from artificial propagation projects may be available for transplants within a few years. Like seed banks for endangered plants, cryogenic preservation could maintain mussel genetic material until the habitat is ready for reestablishment. It could also guarantee a source for reintroduction in the event that an en-

vironmental accident eliminates the wild population.

Along with the power companies, the Ohio Department of Natural Resources and the Kentucky Department of Fish and Wildlife Resources administer the Mussel Trust Fund. The Service's Asheville, North Carolina, Field Office assisted with the grant.

* * *

South Carolina biologists researching the effect of Hurricane Hugo on bald eagle breeding have cited what they call the "strong nest-site tenacity" of the species, which persists despite habitat disruption.

With 52 occupied territories prior to the hurricane, South Carolina had one of the largest nesting concentrations of eagles in the Southeast. Hurricane Hugo destroyed 25 of the State's bald eagle nests and downed more than 6 billion board feet of timber in 24 counties. Because few large trees were left standing, biologists were concerned about the fate of this nesting population.

Remarkably, in spite of drastically altered habitat, 18 of the 25 pairs affected by the storm nested successfully the following year in the few remaining trees, producing clutches as large as their counterparts in areas unaffected by the hurricane. Most of the eagles chose sites close to the places where their original nests had been destroyed. However, several pairs disturbed by timber salvage operations during the nesting period failed to produce young.

It appears that bald eagles are able to adapt to severe habitat alterations, provided that they are not disturbed during the nesting season. As a researcher commented, "A pair of eagles may persist in trying to nest in an area despite repeated failures. That is, eagles do not simply relocate in response to disturbance."

The South Carolina Wildlife and Marine Resources Department conducted the research, aided by funding from the Service.

* * *

As part of the recovery effort for Michaux's sumac (*Rhus michauxii*), the North Carolina office of The Nature Conservancy collected leaf tissue for genetic analysis and demographic data from the 21 locations of this endangered plant that remain in the sandhills and coastal plains of North Carolina and Georgia.

The results of this research will be used to plan the reintroduction of Michaux's sumac into its former range and to complement single-sex populations of the deciduous, rhizomatous shrub. Populations are extremely small, and most are made up of only one sex. When the species was listed in 1989, only 7 of the then-known 16 populations were comprised of 100 or more plants, and only two included representatives of both sexes.

Michaux's sumac is threatened by the conversion of native habitat for agriculture and forestry, residential and commercial development, and the suppression of wildfires. Intolerant of shade, the plant can be overtaken by vegetative succession. It prefers open habitat maintained by fire or mowing. Several populations are along roadsides, where they are vulnerable to highway widening and herbicide application.

The first reintroduction of Michaux's sumac is doing well. The Georgia Heritage Inventory and Woodlanders (an Aiken, South Carolina, commercial nursery that specializes in native plants) cooperated in the transplant effort.

The Service is continuing to work with The Nature Conservancy, State conservation agencies, and private landowners to develop and implement management plans for all sites. The Service's Asheville Office provided partial funding for the collection project.

* * *

Along the South Carolina coast, the most important historical nesting area for the Bachman's warbler (*Vermivora bachmanii*), the Asheville Office is co-

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ordinating a survey for this elusive species.

Thought to be the rarest warbler in North America, this bird has a 150-year history of erratic appearances and disappearances within its known habitat. Although the Bachman's warbler has been sighted several times on the Cuban wintering grounds during the past decade, there have been no confirmed breeding records in the United States since the mid-1960's, when a singing male was photographed near Charleston.

The U.S. Forest Service, Citadel University, the South Carolina Wildlife and Marine Resources Department, and Westvaco Corporation are cooperating in the survey. They will try to confirm sightings reported near Charleston and check on whether Hurricane Hugo may actually have improved this species' habitat near the last known nesting sites by removing the forest canopy from many areas.

* * *

The Asheville Office is working with National Park Service staff and University of Georgia researchers on genetic analysis of the spreading avens (*Geum radiatum*) in North Carolina and Tennessee. The team will develop propagation and transplantation techniques to reestablish this Endangered plant, a member of the rose family, in parts of its former range.

The spreading avens has large, bright yellow flowers that grow on 20 inch-long (50 cm) stems from a basal rosette of leaves. The attractive plant faces threats from illegal collecting and habitat degradation.

* * *

In 1983, citing direct take of the alligator snapping turtle (*Macrolemys temminckii*), a conservation group petitioned the Service to list the species as Threatened. The Service's 1984 finding concluded that there were not enough data to list the turtle but advocated continuing the status review

through correspondence with agencies and experts.

The Service reviewed the status of the alligator snapping turtle again this year. Found in 14 States, the turtle inhabits river systems that flow into the north-central Gulf of Mexico. Rivers in Florida, Georgia, Alabama, Mississippi, Louisiana, and Arkansas probably contain most of the species' total population. Georgia, Louisiana, and Arkansas do not have laws that regulate the take of this turtle, and the effectiveness of regulations in the other States is unknown. The review presented evidence that the demand for alligator snapping turtle meat may be causing a continuing decline of the species. An international trade also exists.

The review concluded that if the States with the majority of the species' population had laws regulating take of the turtle, and if these laws were enforced, Federal listing would not be necessary. The Service will review the status of the turtle in 1995. If the demand for the turtle's meat still exists, and if the turtle's abundance continues to decline, Federal protection as a Threatened species will be needed. In the meantime, the Service will pursue protection for the turtle under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The Service's Jackson Field Office (6578 Dogwood View Parkway, Jackson, Mississippi 39213) has copies of the review.

* * *

Region 5 - Susi von Oettingen, an Endangered Species Specialist with the Service's New England Field Office, participated in several informal consultations and field inspections for projects along the Connecticut River in Vermont and New Hampshire. Two of the visits resulted in the discovery of Endangered dwarf wedge mussels (*Alasmidonta heterodon*) in the project areas. Consultation will continue on both projects, which includes a proposal to stabilize 1,500 feet (460 meters) of river shoreline by the New

Hampshire Department of Transportation and repair and replacement of a collapsed sewer outfall pipe. Both projects could have on-site and downstream impacts on the dwarf wedge mussel.

* * *

In June, biologists for the State of Connecticut found one dwarf wedge mussel at an historic location for the species on a tributary of the Connecticut River. The mussel was last observed at this site in 1961. Biologists discovered two mussel shells, but no living mussels, at another historic site along a different Connecticut River tributary. The mussels may have been dead one year or less. Mussels had last been collected at the second site in 1960.

* * *

New England Field Office endangered species staff, in cooperation with the New Hampshire Nature Conservancy and Natural Heritage Inventory, surveyed a population of the small whorled pogonia (*Isotria medeoloides*) in southeastern New Hampshire. The site may contain the world's largest occurrence of this Endangered orchid. Field office staff also recently discovered a new population of this species in Merrimack County, New Hampshire.

* * *

Michael Amaral, another Endangered Species Specialist with the New England Field Office, assisted biologists from the Rhode Island Division of Fish and Wildlife/Nongame, The Nature Conservancy, and Boston University in establishing an annual population monitoring program for the American burying beetle (*Nicrophorus americanus*) on Block Island, Rhode Island. Fifty non-lethal pitfall traps for this Endangered insect were established in three study areas. Beetles captured at these traps and at a black-light station were counted, sexed, measured, and marked prior to release. Nearly 300 captures were recorded during the 3-day effort, in-

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cluding several recaptured (marked) animals. A population estimate is being developed.

* * *

Two peregrine falcon (*Falco peregrinus*) chicks recently died after prematurely leaving their nest on the Girard Point Bridge over the Schuylkill River in Philadelphia. A survey team under contract to the Pennsylvania Department of Transportation was inspecting the bridges (in connection with planned maintenance) when the abandonment occurred. The incident is under investigation by law enforcement officials of the Service and the Pennsylvania Game Commission.

* * *

The Endangered pink mucket pearly mussel (*Lampsilis abrupta* (=orbiculata)) was recently found to inhabit a reach of the lower Elk River near Blue Creek, West Virginia. The Elk River is a large drainage basin in West Virginia and a century-old historic site for the species. This mussel was found as the result of an informal Section 7 consultation. The Columbia Gas Company of West Virginia, because of its Federal Energy Regulatory Commission permit requirements, consulted with the Service on a routine natural gas pipeline crossing. The Service's West Virginia Field Office recommended that a mussel survey of the river crossing be accomplished. Two female pink muckets were found downstream of the crossing. This newly found population could be affected by increased suspended sediments from streambed disturbance, especially during the extreme low flows being experienced by West Virginia streams this year. Columbia Gas has agreed to "plow" the pipeline across the river, which will be quick and will greatly reduce suspended sediments. Also, great care will be taken to prevent runoff from disturbed areas or accidental spills.

* * *

Plans are under way to establish a captive breeding colony of the Chittenango ovate amber snail (*Succinea ovalis chittenangoensis*). The work will be done by a contractor, through Section 6 funds provided by the Service to the New York State Department of Environmental Conservation. The Chittenango ovate amber snail, listed by the Service as Threatened, is known to occur in only one location worldwide. The population, which is in Madison County, New York, has declined to extremely low numbers despite habitat protection and recovery efforts. Competing snail species are believed to be limiting the Chittenango ovate amber snail population.

The captive breeding colony will provide additional opportunities to study the species, and will be a source of individuals for possible establishment at new sites or for reintroduction in case of a catastrophe at the existing site.

* * *

The Service's New York Field Office has been working with the Federal Aviation Administration (FAA) through informal Section 7 consultation to ensure that needed habitat management work is conducted at a key site of the sandplain gerardia (*Agalinis acuta*), an Endangered plant. This Long Island property, which is now owned by the FAA, is slated for transfer to the National Wildlife Refuge System. As a result of decreasing site maintenance over past years by the FAA, the open grassland habitat that the sandplain gerardia requires is becoming overgrown with shrubby species. Habitat management is needed this year, but transfer of the site to the Service has been delayed. The Nature Conservancy recently signed an agreement with the FAA to conduct the habitat work, which will help ensure the continued survival of the sandplain gerardia at this site.

* * *

Region 6 - This year, a citizens group is conducting a search for evi-

dence of grizzly bears (*Ursus arctos*) in the San Juan Mountains of southwestern Colorado, investigating recent unconfirmed sightings and signs reported since 1988. Although there have been several reports of grizzly bears since the last known grizzly in Colorado was killed in 1979, none of the reports have been verified and no conclusive evidence of the bear's continued presence has been found. The Citizens' Committee for the Colorado Grizzly will be in the San Juan Mountains from July through October, searching for physical evidence (scats, tracks, tree scratchings) of the grizzly.

* * *

Successful bald eagle breeding continues in the Great Plains. The first documented successful bald eagle nesting in Nebraska for over 70 years occurred this year when two young were fledged from a nest along the Lower Platte River near Omaha. Some nesting attempts were made over the last several years, but none resulted in any young.

In another Great Plains State, the first documented successful breeding of bald eagles in Kansas occurred in 1989. Two young fledged from this nest in 1989, and three young in 1990. The third successful year for this nest was 1991 and again, three young fledged. The nest is located on Clinton Reservoir near Lawrence in eastern Kansas. The State's second nest site, confirmed last year in western Kansas near Ness City, fledged one young in 1990 and another this year.

In North Dakota, the nest site discovered 2 years ago on the Missouri River north of Bismarck is still active. This nest fledged two, or possibly three, young this year.

* * *

Initial stages of the pallid sturgeon (*Scaphirhynchus albus*) captive propagation program have begun with the capture of six fish; three appear to be pure pallids and three are crosses with shovelnose sturgeon (*Scaphirhynchus*

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platorhynchus). All the pure pallid sturgeon are males, and all the females are the pallid/shovelnose cross, so no captive breeding will be done this year.

Two of the pure pallids were captured near the mouth of the Platte River in Nebraska. The other four fish were captured on the Mississippi River in Missouri. Additional capture efforts will be conducted this fall and next spring. If pure pallid females are found, captive breeding can begin next year.

For the first time in over 20 years, the presence of the Endangered pallid sturgeon in the Mississippi River in Louisiana has been documented. A commercial fisherman caught seven pallid sturgeon and two pallid/shovelnose hybrids in the Mississippi River near its confluence with the Atchafalaya River in Louisiana. These fish later died as a result of stress incurred during the initial capture.

* * *

Increased numbers of Colorado squawfish (*Ptychocheilus lucius*) were found in a recent survey of the mainstem Colorado River in western Colorado. Eighty-four of these Endangered fish were captured, more than in any other year of the recovery program. Thirty-six were young, indicating that some reproduction and survival of offspring are occurring. The survey clearly indicates that the 15-mile (24-km) stretch of river surveyed is important habitat for adult Colorado squawfish.

* * *

Botanists with the Navajo Natural Heritage Program have reported finding the Navajo sedge (*Carex specuicola*) in Utah, the first time this Threatened plant has been located outside Arizona. The new site, within the Navajo Nation near Monument Valley in southern San Juan County, has encouraged researchers to plan surveys for any other Utah popula-

tions in San Juan, Kane, and Garfield Counties.

* * *

Fishery biologists have captured an adult razorback sucker (*Xyrauchen texanus*) in the upper Colorado River near Rifle, Colorado, and transported the fish to the Dexter National Fish Hatchery in New Mexico to establish broodstock for captive propagation. This species is under consideration for listing as Endangered, which would make it the fourth listed fish in the Colorado River system. Because no young razorbacks have been found in the upper Colorado River in the past 26 years, biologists fear that only immediate action can prevent the species from becoming extinct in the wild. The Service plans to begin restocking razorback suckers into the Gunnison River and upper portions of the Colorado River in 1993.

* * *

The Wolf Management Committee has submitted recommendations to the Secretary of the Interior and to Congress regarding gray wolf (*Canis lupus*) management and reintroduction in Yellowstone National Park and the Central Idaho Wilderness Area. The recommendations are that Congress should 1) designate the area of Idaho, Montana, and Wyoming (with the exception of an area surrounding Glacier National Park) as a "nonessential experimental area" for the purposes of wolf recovery until July 1, 1993; 2) declare that the primary management authority for wolves outside the defined Glacier National Park area, other national parks, and national wildlife refuges will go to the States, provided that they have adopted wolf management plans; and 3) declare that any such State wolf management plan include as basic components the right of the State to manage wolves in terms of their impact on livestock, big game resources, and multiple land uses and the responsibility of the State to pursue wolf recovery.

The Wolf Management Committee also provided a management plan that the Fish and Wildlife Service would utilize to manage wolves in the experimental population areas. It further recommended that the States use this plan as a guideline in developing their own plans. The goal of the plan is to maintain a minimum population of 30 breeding pairs of wolves distributed within the 3-State area. The Park Service and the Fish and Wildlife Service would reintroduce wolves into Yellowstone National Park and inventory wolf habitat in Idaho for 5 years. If a wolf population is not found in central Idaho after the study, the animals would be reintroduced there. All of these activities would require a Fish and Wildlife Service rulemaking and Environmental Impact Statement.

BOX SCORE LISTINGS AND RECOVERY PLANS

Category	ENDANGERED		THREATENED		LISTED SPECIES TOTAL	SPECIES WITH PLANS
	U.S.	Foreign Only	U.S.	Foreign Only		
Mammals	55	249	8	22	334	33
Birds	73	153	12	0	238	69
Reptiles	16	64	18	14	112	27
Amphibians	6	8	5	0	19	7
Fishes	53	11	34	0	98	51
Snails	7	1	6	0	14	7
Clams	39	2	2	0	43	33
Crustaceans	8	0	2	0	10	5
Insects	13	1	9	0	23	13
Arachnids	3	0	0	0	3	0
Plants	209	1	61	2	273	137
TOTAL	482	490	157	38	1167*	382**
Total U.S. Endangered	482	(273 animals, 209 plants)				
Total U.S. Threatened	157	(96 animals, 61 plants)				
Total U.S. Listed	639	(369 animals, 270 plants)				

* Separate populations of a species that are listed both as Endangered and Threatened are tallied twice. Those species are the leopard, gray wolf, grizzly bear, bald eagle, piping plover, roseate tern, Nile crocodile, green sea turtle, and olive ridley sea turtle. For the purposes of the Endangered Species Act, the term "species" can mean a species, subspecies, or distinct vertebrate population. Several entries also represent entire genera or even families.

** There are 310 approved recovery plans. Some recovery plans cover more than one species, and a few species have separate plans covering different parts of their ranges. Recovery plans are drawn up only for listed species that occur in the United States.

Number of Cooperative Agreements signed with States and Territories: 53 fish & wildlife
39 plants

Number of Cooperative Grant Agreements signed for the African Elephant Conservation Act: 7

Number of CITES Party Nations: 112

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ENDANGERED SPECIES

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