

ENDANGERED SPECIES

Technical Bulletin

Department of the Interior, U.S. Fish and Wildlife Service, Washington, D.C. 20204

Steller Sea Lion is Given Emergency Protection

Responding to a dramatic decline in the number of Steller or northern sea lions (*Eumetopias jubatus*) in Alaska, the National Marine Fisheries Service (NMFS) has taken emergency action to protect this species throughout its range under the Endangered Species Act.

The emergency action was prompted by a November 1989 petition from the Environmental Defense Fund and 17 other environmental organizations to list all populations of the Steller sea lion in Alaska as Endangered. NMFS, which has responsibility under the Endangered Species Act for most marine species, subsequently concluded that the species should be listed as Threatened on an emergency interim basis and published a determination in the April 5, 1990, *Federal*

Register. The Fish and Wildlife Service codified the determination, and on April 10, the Steller sea lion was added to the List of Endangered and Threatened Wildlife. The 240-day emergency rule is effective through December 3, 1990.

The Steller sea lion is a large seal, with males reaching up to 11 feet (350 centimeters) in total length and weighing over 1 ton (910 kilograms). Females are much smaller, averaging about 8 feet (240 cm) in total length and weighing about 605 pounds (275 kg). The species' diet consists mainly of various fishes (such as pollock, halibut, herring, salmon, cod, and flounder), octopi, and crustaceans.

The Steller sea lion's range extends from Japan through the Soviet Union's Kuril Islands, the Okhotak Sea, the

Aleutian Islands, the Bering Sea, the Gulf of Alaska, and along the Pacific coastline down to southern California. More than 50 breeding colonies or rookeries have been identified in the United States. Most of the rookeries are on isolated islands, free from human disturbance, in the Gulf of Alaska and southern Bering Sea.

Decline in Numbers

In the 1970's, the number of Steller sea lions in the eastern Aleutian Islands (which has one of the largest concentrations in the United States) began declining. The decline subsequently spread to the western Gulf of Alaska, the central

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photo by Craig Johnson

Steller sea lions hauled out on the Chiswell Islands, Alaska Maritime National Wildlife Refuge



Regional endangered species staffs have reported the following news:

Region 1—The latest survey of San Nicolas island, conducted by the Fish and

Wildlife Service in April 1990, found 15 adult southern sea otters (*Enhydra lutris nereis*), including two adults that had not been observed since October 1989, and one new pup. The pup is the first sea

otter known to have been weaned at the island. Frequent mating behavior was observed among the sea otters, indicating that the otters' social behavior appears to be normal.

Preliminary indications from the 1990 population census of the least Bell's vireo (*Vireo bellii pusillus*) suggest that last year's significant population decline will not be repeated this year. At least three major areas (Prado Basin, Pilgrim Creek, and San Diego River) already support more birds than in 1989.

The Service's Ventura, California, Field Station staff recently met with Southern California Edison, Seneca Resources Corporation, and Santa Fe Petroleum Corporation to discuss the burial of transmission lines in the vicinity of the Andean condor (*Vultur gryphus*) experimental release site. Burying the transmission lines would reduce the possibility of the condors being electrocuted. The companies would like to cooperate with the Service and are exploring the economic feasibility of burying the transmission lines.

The 1990 California condor (*Gymnogyps californianus*) breeding season came to a close with the hatching of two more condors at the San Diego Wild Animal Park and Los Angeles Zoo. The captive condors produced a total of 15 eggs this season, of which 8 hatched. All 8 chicks are doing well. Biologists will not try to determine the sex of the condor chicks for another 6 to 7 months in order to avoid stress that could kill the birds. There are now 40 California condors, all of them in two captive breeding facilities. The number of condors has almost doubled since 1982, when there were 22 condors. The Service hopes to begin releasing condors into the wild as early as 1991.

Meanwhile, the Service is soliciting nominations for a third captive breeding facility for California condors. Readers with suggestions are invited to contact the Ventura Field Office, 2291-A Portola Road, Suite 300, Ventura, California 93003 (telephone: 805/644-1766; FTS 983-6039).

Region 3—The Fish and Wildlife Service's Marion, Illinois, Field Office has been working with the U.S. Forest Service's Shawnee National Forest to update its "Standards and Guides for the Management of Timber Harvests." One standard in this internal agency document has special significance for protecting the Endangered Indiana bat (*Myotis sodalis*) in southern Illinois. The Forest Service is considering changing the current standard that preserves wooded corridors along both sides of perennial streams in the Shawnee National Forest, expanding it to include intermittent streams. Expansion of

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THE ENDANGERED SPECIES TECHNICAL BULLETIN is published monthly by the U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

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1989 Amendments to CITES Strengthen Protection for Endangered Wildlife and Plants

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The international trade in plants and wildlife, including whole plants, animal skins, body parts, worked pieces, and live specimens, is both big business and a major factor affecting worldwide biodiversity. It is estimated that the international plant and animal trade is worth more than \$5 billion annually, of which up to 30 percent may be illegal. Public attention recently has focused on such issues as the slaughter of African elephants (*Loxodonta africana*) for the ivory trade, the illegal trade in chimpanzees (*Pan troglodytes*), and the near-extinction of the African black rhinoceros (*Diceros bicornis*) for its horn. But many little-known, ecologically significant species also have been seriously depleted by international commerce.

Twenty years ago, there was virtually no international regulation of the trade in plants and wildlife. In 1972, the United Nations Stockholm Conference on the Human Environment recommended worldwide controls over this market. In response, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) was developed and signed at a 1973 conference in Washington, D.C. As of May 1990, 107 countries have become Parties (member countries) to CITES.

CITES has become the major international effort for global plant and wildlife protection and is probably the best known international conservation treaty. The trade in hundreds of species of vertebrates, invertebrates, and plants is regulated by CITES. However, the treaty only covers species that are affected by international trade. (Species threatened mainly by habitat loss, for example, are beyond the scope of CITES.) Because the international plant and wildlife trade is both monitored and regulated by the individual CITES Parties, the effectiveness of the treaty depends on the law enforcement and regulatory infrastructure of each country.

Which Species are Covered?

CITES regulates the trade in plants and animals in varying degrees, depending on their biological status and vulnerability to commercial exploitation. Three appendices to the treaty identify how much protection is provided to each species. Appendix I lists species in danger of extinction that are, or may be, affected by international trade. Commercial trade in these species is prohibited. Appendix II includes species that may become endangered if their trade is not brought under control. Commercial trade in Appendix II

species is subject to regulation, and is allowed only if export permits are obtained stating that trade will not harm the species. Appendix III lists species that individual CITES Parties identify as subject to domestic regulations for the purpose of restricting or preventing exploitation. Permits also are required for trade in Appendix III species.

About every 2 years, the CITES Parties meet to review the international plant and wildlife trade, amend the appendices as needed (either placing species in the appendices or transferring them among the appendices), and adopt resolutions to further strengthen plant and wildlife protection.

October 1989 Conference Resolutions

The seventh meeting of the CITES Conference of the Parties took place in Lausanne, Switzerland, October 9-20, 1989. The meeting attracted more press and world community attention than all of the previous conferences, largely due to the ivory trade and the crisis facing the African elephant. But the October meeting addressed many other important issues, including increased protection for several species and changes in implementing the treaty. Fifteen resolutions were passed at the meeting, which addressed a wide range of issues. Two of the resolutions addressed the shipment of live animals and captive breeding.

Shipment of Live Animals: CITES has been addressing the problems of shipping live animals since its inception. The welfare of individual animals in transit is specifically covered in the text of the Convention, which requires Parties to ensure that "any living specimen will be so prepared and shipped as to minimize the risk of injury, damage to health or cruel treatment." Efforts to reduce transport-induced mortalities improve the welfare of individual animals and reduce the need to take additional animals from wild populations.

The resolution passed at the October meeting notes that "mortalities in transport remain of significant concern . . . and undermine the concept of sustainable trade." The resolution includes three recommendations:

- shipments should be cleared for export only if they have passed a health and welfare checklist;
- Parties should gather information on the level and causes of mortality during transport; and
- all shipments should comply with the International Air Transport Association's (IATA) Live Animals Regulations for air transport, or the CITES' Guidelines for Transport of Live Specimens for terrestrial and marine shipments.

(Stricter domestic measures for transporting live animals exist in many countries, including the United States. The domestic regulations for transporting live animals to the United States (50 CFR 14) are currently being revised.)

The Parties to CITES also established a Working Group on Transport of Live Specimens to monitor transport conditions and transport-induced mortalities and to assist the Parties in implementing pertinent resolutions.

Captive Breeding: Captive-bred animals of Appendix I species are treated as if they are on Appendix II. It is therefore critical to effectively control and regulate commercial operations that breed Appendix I animals. At the October meeting, the Parties established criteria for proposals to register the first commercial captive-breeding operation for an Appendix I animal species. Between now and the next conference in 1992, the United States will review this resolution, as well as any proposals submitted pursuant to it.

Changes in the Appendices

The Parties considered many different proposals to amend the CITES Appendices (see F.R. 9/5/89 and F.R. 10/6/89) at the October meeting, most of which passed. They have been incorporated as a final rule in U.S. regulations. (See F.R. 12/15/89 for a list of the decisions of the October meeting, and F.R. 2/20/90 for a list of all of the changes to the CITES Appendices, as implemented in 50 CFR 23.23.)

African Elephants: After a long, contentious debate, the Parties agreed at the conclusion of the October meeting to place all African elephant populations on Appendix I. An accompanying resolution listed criteria that must be met for countries to request the transfer of populations back to Appendix II. A panel of experts also will be established to review these requests, examining scientific, trade, and law enforcement information. It is expected that some southern African countries will request the transfer of their populations back to Appendix II. In addition, China, South Africa, the United Kingdom (for Hong Kong), Botswana, Zimbabwe, Malawi, and Zambia have taken reservations and not accepted the inclusion of the African elephant on Appendix I. (A more detailed article on recent actions taken to protect the African elephant will be included in a future issue of the BULLETIN.)

Bats: Seven species of *Pteropus* (fruit bats or flying foxes) from the Pacific region were moved from Appendix II to Appendix I, and all other species of *Pteropus*, as well as all species in the

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CITES Amendments

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genus *Acerodon* (flying foxes), were placed in Appendix II. CITES often includes an entire genus in Appendix II because of problems with similarity of appearance and identification. This is particularly true for flying fox species, many of which are being seriously depleted for human consumption.

Cats: Three species of New World spotted cats—the little spotted cat (*Felis tigrina*), ocelot (*Felis pardalis*), and margay (*Felis wiedii*)—were transferred from Appendix II to Appendix I. Some subspecies of each species were already listed on Appendix I, but Appendix I protection is now afforded to all subspecies. The main threat to these cats has been poaching and smuggling for the fur trade. Identification of skins from different subspecific populations has been difficult.

Bears: Sloth bears (*Melursus ursinus*) were transferred from Appendix II to I, due to seriously declining populations and the trade in bear gall bladders and other parts. There is also evidence that the capture of cubs for entertainment purposes is a threat to the species. The sloth bear, once common in most forests of its range in Sri Lanka, India and Nepal, is now rapidly disappearing in the wild.

The trade in brown bears (*Ursus arctos*), including skins, gall bladders for medicinal purposes, meat and paws for human consumption, claws for decorative purposes, and live animals for zoos and circuses, is a significant threat to the survival of many subspecies. In the past, the treatment of brown bear subspecies in CITES has been confusing, with some subspecies not on the appendices, some listed on Appendix II, and some on Appendix I. As a result of the October meeting, brown bear populations in Afghanistan, India, Mexico (the Mexican grizzly bear), Nepal, and Pakistan are listed on Appendix I, while all other populations in the world, except those in the Soviet Union, are on Appendix II. It is hoped that this increased regulation and protection will help stem the trade-induced decline of many bear populations.

Birds: The U.S. Fish and Wildlife Service is very concerned that psittacines (parrots) and other bird species are being traded at levels that their wild populations cannot sustain. Three species of psittacines were transferred from Appendix II to Appendix I at the October CITES meeting: Moluccan or salmon-crested cockatoo (*Cacatua moluccensis*), Illiger's macaw (*Ara maracana*), and Tucuman amazon (*Amazona tucumana*). CITES identified the Moluccan cockatoo as a "significantly traded species," which means that it is being detrimentally affected by international trade. The species was placed in Appendix II in 1981. From 1981-1987, 54,600 imports of the Moluccan cockatoo were reported to CITES, of

which 40,232 (74 percent) were imported into the United States, almost entirely for the commercial pet market. In proposing additional protection for the species at the October meeting, Switzerland noted "the only way to prevent the species from becoming extinct is to transfer it to Appendix I."

Crocodiles: All members of the families Alligatoridae and Crocodylidae are listed on either Appendix I or Appendix II. The discussions at the October meeting about the Nile crocodile (*Crocodylus niloticus*), including export quotas, "ranching" operations, and listing of geographic populations in the appendices, were contentious. Although commercial ranching of crocodiles can limit the pressure on wild populations to sustainable levels, concerns were expressed at the meeting regarding the effect of some ranching operations on the Nile crocodile. The Parties finally agreed to list wild populations of the Nile crocodile in Cameroon, Congo, Ethiopia, Kenya, Madagascar, Somalia, Sudan, and Tanzania on Appendix II, subject to export quotas; wild populations in Botswana, Malawi, Mozambique, Zambia and Zimbabwe were listed on Appendix II, under CITES ranching criteria. All other wild populations remain on Appendix I. The CITES Parties will continue to monitor the trade in the skins of all species of crocodiles.

Lizards and Snakes: The Caiman lizard (*Dracaena paraguayensis*), found in Paraguay, Brazil, and possibly Bolivia, was placed on Appendix II due to its similarity of appearance and taxonomic confusion with *Dracaena guianensis*, which is heavily traded for its skin. The Chinese crocodile lizard (*Shinisaurus crocodilurus*) was placed on Appendix II due to increasing demand for it in the European and American pet trade. (The wild population is estimated at approximately 2,500.)

Three snake species—the oriental rat snake (*Ptyas mucosus*), Asiatic cobra (*Naja naja*), and king cobra (*Ophiophagus hannah*)—were transferred from Appendix III to Appendix II. These species, found throughout Southeast Asia and the Indian subcontinent, are traded mostly for the exotic leather industry. The oriental rat snake is probably the most heavily traded snake in the world, with at least 1.8 million skins entering trade every year. The Appendix II listing will allow for more extensive monitoring of the trade in these ecologically important species.

Fishes: Of particular note, the Parties agreed to transfer the coelacanth (*Latimeria chalumnae*) to Appendix I. This species, found only in deep waters of the Comores Archipelago near Madagascar is a unique "living fossil" only recently discovered by science. The coelacanth was believed to have become extinct millions of years ago until it was rediscovered this century. It is ironic that this last remaining representative of a unique phase in vertebrate evolution is endangered due to the museum and aquarium trade.

Corals: Hard or reef-building corals are traded as souvenirs, aquarium decorations, jewelry, and for other decorative purposes. It is estimated that the world trade in raw ornamental corals is at least 2,000 tons (1,800 metric tons) a year, with the United States being the world's main importer. Black corals (order Antipatharia) are already in Appendix II.

As a result of the October meeting, all species in several taxa of hard corals have been added to Appendix II. They include all species in the orders Scleractinia and Coenothecalia, and all species in the families Tubiporidae (order Stolonifera), Milleporidae, and Systeridae (order Athecata). The export of these corals now requires permits stating that the trade will not harm wild populations. It is hoped that the Appendix II listing will provide improved trade information, stimulate improved management of coral reefs and coral populations, and stem the global loss of corals.

Flower Bulbs: Massive collection of snowdrops (*Galanthus* spp.) and sternbergia (*Sternbergia* spp.) flower bulbs from wild populations, mostly in Turkey (a non-Party), poses a serious threat to the survival of these plants in the wild. More than 49 million bulbs of snowdrops, an extremely popular spring-flowering garden bulb, are traded every year. At the October meeting, the Parties agreed to include all species and natural hybrids of *Galanthus* and *Sternbergia* in Appendix II. It is hoped that the Appendix II listing will provide improved trade information, encourage necessary scientific studies, and stimulate captive propagation of the flower bulbs.

Succulents: Several species of succulents were transferred from Appendix II to Appendix I. Three dwarf species of *Pachypodium* and their natural hybrids, as well as all dwarf species of the subgenus *Lacanthus* of the genus *Euphorbia* and their natural hybrids, are now listed on Appendix I. These unusual succulents, endemic to Madagascar, are particularly vulnerable to overcollection by commercial suppliers due to high collector interest. Although trading wild specimens of these succulents is now prohibited by CITES, artificially propagated specimens still can be traded with export permits. It is hoped that listing the plants will stimulate increased artificial propagation and reduce the pressure on diminishing wild populations.

Orchids: Two genera of slipper orchids, *Paphiopedilum* (from Southeast Asia) and *Phragmipedium* (from South America), were transferred to Appendix I. These orchids have increased in commercial popularity and have been depleted in the wild in many parts of their former range due to overcollection. As with other plants, it is hoped that this listing will stimulate increased artificial propagation and reduce the collection of wild specimens.

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Ten species of plants and animals were proposed by the Fish and Wildlife Service during April 1990 for listing as Threatened or Endangered. Four of these taxa—two plants and two animals—are native to the United States. The remaining six, all reptiles, are found only in other countries. If the proposed listings are approved, Endangered Species Act protection will be extended to the following:

Prairie Mole Cricket (*Gryllotalpa major*)

As its name implies, this is a burrowing insect found in prairie habitat. Historically, it occurred widely throughout native tall-grass prairie in eastern Kansas and eastern Oklahoma, southwestern Missouri, and northwestern Arkansas. There are also records of disjunct populations in Illinois and Mississippi, but the species apparently is extirpated in these States.

Almost all of the native prairie in these areas has been converted to cropland and other uses. For example, D. S. Wilcove estimated in 1987 that only 0.5 percent of Missouri's presettlement prairie remains. As a result, the prairie mole cricket and many other species dependent on this type of habitat have declined dramatically. A range-wide survey from 1986 to 1989 revealed that the cricket's habitat has been reduced to scattered remnants of prairie in Oklahoma, Kansas, Missouri, and Arkansas. Most of the remaining populations are very small. To help in protecting the species and its last fragments of habitat, the Service has proposed to list the prairie mole cricket as Threatened (F.R. 4/25/90).

Florida Saltmarsh Vole (*Microtus pennsylvanicus dukecampbelli*)

Although similar in appearance to the meadow vole (*Microtus pennsylvanicus pennsylvanicus*), its widespread relative, the Florida saltmarsh vole has a much more restrictive habitat. This small rodent exists only in a few grassy areas within the salt marsh of Waccasassa Bay on Florida's gulf coast. Having such a restrictive range makes the Florida saltmarsh vole vulnerable to extinction. The remaining population is very small. In recognition of this subspecies' precarious status, the Service has proposed to list it as Endangered (F.R. 4/11/90).

Fossil records indicate that the Florida saltmarsh vole had a much more extensive distribution throughout Florida during the Pleistocene when the sea level was lower than today. Its decline is probably due to natural causes. As the climate changed and the sea rose, most of the coastal grassland and prairie habitat



photo by Jim Rathert, courtesy of Missouri Department of Conservation

The prairie mole cricket (*Gryllotalpa major*) is a large insect, measuring up to 2.5 inches (6.0 centimeters) in total length. This species is characterized by forelegs that are highly adapted for digging in prairie soils. Male mole crickets dig specially designed burrow systems that contain a bulb-like resonance chamber to amplify their calls during the mating season. Calls at one Missouri prairie have been heard over a quarter of a mile away.

needed by this vole disappeared. The single known population apparently exists under marginal ecological conditions, and could be lost to a storm or any other event that alters the remaining habitat. Hurricane Elena's pass through the Waccasassa Bay area in 1985 apparently almost caused the subspecies' extinction. When biologists returned for surveys in 1987 and 1988, only one saltmarsh vole was captured despite intensive trapping.

Lyrate Bladder-pod (*Lesquerella lyrata*)

The lyrate bladder-pod, a small annual plant in the mustard family (Brassicaceae), is native to cedar glades in the southeastern United States. This type of habitat is characterized by shallow-soiled open areas that are associated with limestone outcroppings and often surrounded by cedar (*Juniperus virginiana*) woods. Most cedar glades in the southeast have been modified or lost due to urban and agricultural development. Only widely scattered pockets remain. Two populations of *L. lyrata* are known to survive, both in northwestern Alabama (Colbert and Franklin Counties). Because of the species' low numbers and the vulnerability of its remaining habitat, the Service has proposed to list the lyrate bladder-pod as Threatened (F.R. 4/25/90).

The glades still inhabited by the plant have been at least partially disturbed by grazing, cultivation, and mowing. Some form of periodic disturbance probably is necessary in order to arrest invasions of competing plants and to stimulate seed germination. Thus, agriculture and the

survival of the lyrate bladder-pod are not necessarily incompatible. The species could be jeopardized, however, if the sites are heavily grazed or if the plants are plowed or sprayed with herbicides before the plants disperse seeds in mid-May.

Terlingua Creek Cat's-eye (*Cryptantha crassipes*)

This perennial plant in the family Boraginaceae is silvery in color and covered with bristly hairs. Slender, erect stems up to 2 feet (60 centimeters) in height grow from a dense mound of narrow leaves, and small white flowers bloom from March to early June. The species occurs at a few sites in western Texas within the Terlingua Creek drainage, where it is restricted to dry, chalky, gypsum-bearing shale hills.

The 6 known populations consist of fewer than 3,800 mature plants, but no seedlings have been discovered. All are on privately owned land in Brewster County. Most of the sites are within an area that has been subdivided into lots and sold as resort property. Some of the roads constructed by the resort company cross *C. crassipes* population sites and probably destroyed an unknown number of plants. The species could be imperiled if landowners decide to develop the tracts occupied by the remaining populations. Other potential threats include habitat damage from livestock and off-road vehicles. Because of the species' restricted range and vulnerable habitat, the Service has proposed listing the Terlingua Creek cat's-eye as Endangered (F.R. 4/13/90).

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Proposed Listings

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Six Foreign Reptiles

On April 24, the Service proposed to list the following foreign reptiles as Endangered species:

• **Maria Island snake (*Lioophus ornatus*)**—Originally found on the island of St. Lucia in the Caribbean, this snake was thought to have become extinct in the early 20th century until it was rediscovered on the nearby islet of Maria Major. Adults reach up to 3 feet (1 meter) in length and are black to olive-brown in color, broken by a zig-zag pattern of white/yellow spots. The current population is estimated to number 50 to 100 individuals.

• **Maria Island ground lizard (*Cnemidophorus vanzoi*)**—This species also probably occurred historically on St. Lucia but disappeared after non-native predators (mongooses and rats) became established on the island. It survives on Maria Major and Maria Minor. In 1973, both of these dry, rocky, volcanic islets were designated as a preserve for the protection of their unique wildlife. Mature Maria Island ground lizards can grow up to 15 inches (38 cm) long and are generally olive-green, with light striping down the back and lines of blue-gray spots along the sides. Fewer than 1,000 of the lizards are believed to remain.

• **Inagua Island turtle (*Trachemys stejnegeri malonei*)**—A subspecies of the central Antillean slider, *T. s. malonei* is endemic to Great Inagua Island in the Bahamas. Adult Inagua Island turtles have a green-brown, high-domed carapace up to 9.5 inches (24 cm) long and gray to olive-colored skin. These turtles inhabit freshwater ponds, streams, and swamps that have abundant vegetation. Part of the subspecies' habitat is within a preserve established for the native flamingos. Existing salt ponds on the island may be permitted to expand because, although parts of the preserve would be inundated, flooding is not expected to harm the flamingos. However, salt water is lethal to the Inagua Island turtle. The pumping of freshwater ponds for drinking water to supply the island's growing human population also could reduce the turtle's habitat. An introduced predator, the feral hog, is another threat. There are an estimated 200 to 500 turtles remaining.

• **Cat Island turtle (*Trachemys terrapen felis*)**—This subspecies, another Bahamian turtle, occurs only on Cat Island. Adults are inconspicuous, having a carapace grayish-brown to yellowish-olive in color with few if any markings. They reach about 13 inches (32 cm) in carapace length. These turtles generally live around ephemeral ponds, and survive dry

periods by burrowing into the muck and leaf litter of former wet areas. Some turtles are taken for food and the local pet trade, but the greatest threat to this subspecies is habitat loss. Seven out of the eight known Cat Island turtle population sites have been damaged by conversion to agriculture and other uses. Land is frequently cleared for farming by burning off all natural vegetation, and charred turtle carcasses are usually found when the brush and debris are removed. Extensive surveys on Cat Island in 1987 located only 350 turtles.

• **Brazilian sideneck turtle (*Phrynops hoguei*)**—First described in 1967, the Brazilian sideneck turtle is a rare native of the Rio Paraiba and Rio Itapemirim drainages in southeastern Brazil. This species has a particularly narrow head and neck, and a domed, elongated carapace measuring up to 13 inches (34 cm) in length. Extensive deforestation and increasing development in the region have degraded the species' riverine habitat, making it silty and polluted. The banks and marshes along the river no longer support turtle reproduction, and no juvenile specimens have been found during periodic field collections.

• **South American red-lined turtle (*Trachemys scripta callirostris*)**—Also referred to as the Colombian slider, this colorful subspecies once was common in the river drainages of northern Colombia and northwestern Venezuela. Much of its known habitat, however, has been heavily damaged by erosion and industrial pollution. Petroleum facilities now occupy virtually all of the turtle's former habitat in Venezuela, and many of the remaining wetlands throughout the species' range are being drained and burned. Named for the bright red extending back from its eye, this attractive turtle also has a relatively large (24-inch or 60-cm) carapace that is highly patterned with yellow bars and black and green concentric circles. It has appeared regularly in the European pet trade for many years. Hatchlings are a bright emerald-green. The color and patterning of these juveniles inspire some local people to gather large numbers of them for eventual sale as dried trinkets. Large numbers of eggs and adult turtles also are gathered.

Conservation Measures

Among the conservation benefits authorized by the Endangered Species Act are: protection from adverse effects of Federal activities; restrictions on take and trafficking; the requirement for the Service to develop and implement 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 listed 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 their own more restrictive laws specifically against the take of State or federally listed plants and animals.

CITES Amendments

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CITES and The Fish and Wildlife Service

The opening sentence of CITES states: "... wild fauna and flora in their many beautiful and varied forms are an irreplaceable part of the natural systems of the earth which must be protected for this and the generations to come." The Service firmly supports this goal, and is committed to the full implementation of CITES.

For many species, CITES is a success. Without the treaty, many populations in existence today might have been driven to extinction by uncontrolled trade. The October 1989 CITES biennial meeting accomplished a great deal, but much more work needs to be done to bring trade down to sustainable levels for many species.

For more information on CITES and the United States' involvement in the treaty, and to obtain copies of the CITES appendices, contact the Fish and Wildlife Service, Office of Management Authority, Room 432-ARLSQ, 1849 C Street, N.W., Washington, D.C. 20240.

Final Listing Rules Approved for the Desert Tortoise and Seven Other Species

During April of 1990, final listing rules were published for the desert tortoise, one mussel species, and six plant species. Endangered Species Act protection is now available to the following:

Desert Tortoise (*Gopherus agassizii*)

The desert tortoise has received much attention since the Fish and Wildlife Service took emergency action to list the Mojave population as Endangered on August 4, 1989 (see BULLETIN Vol. XIV, Nos. 9-10). During the 240-day life of the emergency rule, the Service studied the tortoise and its habitat, sought public input, and prepared a proposal to provide long-term Endangered Species Act protection to the population.

On April 2, 1990, a final rule was published in the *Federal Register* listing the Mojave population of the desert tortoise as Threatened. The Beaver Dam Slope subpopulation in Utah, which was listed as Threatened with Critical Habitat in 1980 (see BULLETIN Vol. V, No. 9), is included as part of the greater Mojave population under this rule and is not treated separately; the area designated as Critical Habitat in 1980 will remain in effect. The rule also treats all desert tortoises from the Sonoran population (south and east of the Colorado River) found outside their native range as Threatened due to their similarity in appearance to the Mojave tortoises. (The Service will continue to study the status of the Sonoran population and will make a determination early in 1991 on whether or not to prepare a listing proposal.)

The desert tortoise is a long-lived reptile that inhabits the Mojave, Colorado, Sonoran, and Sinaloan Deserts in the southwestern United States and Mexico. The Mojave population covers tortoises north and west of the Colorado River in California, southern Nevada, southwestern Utah, and northwestern Arizona. At least 50 percent of the Mojave population's occupied habitat is managed by the Bureau of Land Management.

The Mojave population has been declining for many years, primarily due to increasing human activity. Urbanization, energy development, mining, conversion of land to agriculture, livestock grazing, off-road vehicle recreation, and military activities have destroyed or degraded tortoise habitat. The growth of Las Vegas and other communities in the western Mojave is expected to continue, which will further reduce the tortoise's available habitat. Roads are fragmenting the remaining tortoise habitat, making the tortoise subpopulations more vulnerable to extirpation. Other threats to the survival of the



Desert tortoises in the Mojave population, such as this one in southern Nevada, are now listed as Threatened.

Mojave population include illegal collection, vandalism (including shooting and the crushing of tortoises under vehicles), the spread of a fatal upper respiratory disease syndrome, and increasing predation of juvenile tortoises by common ravens (*Corvus corax*) and other species.

The Service received more than 1,900 written and oral comments on its proposal to list the Mojave population of the desert tortoise. After considering the best biological information available, the Service changed its classification of the Mojave population from Endangered to Threatened. At the time the Service issued its emergency rule listing the Mojave population as Endangered, the Service believed that the presence of an upper respiratory disease syndrome could cause the extinction of the population. The Service subsequently learned that although the disease syndrome is widespread, some areas appear to be unaffected or affected to a limited degree. Although the Mojave population in the eastern part of its range is facing many other threats, particularly near urban centers, tortoise populations had not been clearly documented as declining throughout the eastern Mojave at the time of listing. Since the final rule was published, however, the Service has identified apparently high tortoise mortality in some locations in the eastern Mojave. The Service is closely monitoring

the tortoise and its habitat, and may have to consider other options to maintain the Mojave population.

There is normally little difference in the protection given to an Endangered versus a Threatened species under the Endangered Species Act. Anyone taking, attempting to take, or otherwise illegally possessing a desert tortoise without a permit will be subject to the same penalties as if the population were listed as Endangered. Section 7 of the Act also will continue to protect the species from Federal actions that could jeopardize its survival. (Because the Bureau of Land Management, Department of Defense, and National Park Service manage large areas within the tortoise's range, extensive Section 7 consultations will be required between the Service and these agencies.) The Service will use available funding to determine the causes of, and possible treatments for, the upper respiratory disease syndrome infecting the tortoise; identify and isolate healthy populations; investigate predator control to reduce the loss of immature tortoises; educate the public to discourage relocating and releasing captive tortoises; and address habitat issues such as land acquisition, fencing, and habitat improvement.

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Final Listing Rules

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Cobana negra (*Stahlia monosperma*)

This medium-sized evergreen tree in the pea family (Fabaceae) can reach up to 50 feet (16 meters) in height. It has pinnately compound, alternately arranged leaves and yellow flowers. The tree is endemic to Puerto Rico, the adjacent island of Vieques, and the Dominican Republic. The species was once common on the edges of salt flats and shallow lagoons bordering mangrove forests; however, extensive filling and draining of these areas for coastal development and grazing, along with cutting of the trees for furniture and fenceposts, has reduced the species' distribution to a few small, scattered populations. The largest remaining population (23 mature trees and 35 seedlings) occurs along the extreme southeastern coast of Puerto Rico, an area under intense pressure for residential and tourist development. Other mature trees are found on the northeast coast and on U.S. Navy property on the island of Vieques. These trees also are threatened by development of the wetlands and by cutting. The Service proposed listing *S. monosperma* as a Threatened species on May 12, 1989 (see BULLETIN Vol. XIV, No. 6), and the final rule was published in the April 5, 1990, *Federal Register*.

Palo de Rosa (*Ottoschulzia rhodoxylon*)

The palo de rosa is another evergreen tree that is endemic to Puerto Rico and the island of Hispaniola. This tree in the family Icacinaceae grows up to 15 feet high (5 meters) and has thick, leathery leaves. Only nine of the trees are known to exist in three areas in Puerto Rico: one tree grows on the limestone hills on the north coast, seven grow in dry, limestone forests on the south coast, and one grows on the serpentine soils of the western mountains. Urban, residential, and industrial expansion has greatly reduced the forested area of Puerto Rico. Because so few trees remain, the species is extremely vulnerable to continuing development, changes in forest management practices, and natural disturbances (such as flash flooding). The Service proposed to list the palo de rosa as Endangered in the July 27, 1989, *Federal Register* (see BULLETIN Vol. XIV, No. 8); the final rule was published April 10, 1990.

Cassia mirabilis

This shrub, a member of the family Fabaceae, grows up to 30 inches (1 meter) in height and has solitary, yellow flowers. It was once distributed

throughout the silica sands of the northern coast of Puerto Rico, but extensive urban, industrial, and agricultural development has reduced its range to three privately owned sites. Only 150 to 200 plants are known to occur in these areas. The largest population is threatened by sand extraction, squatters, and trash dumping. Road construction and a proposed office building complex could eliminate the other two populations, although there are plans to attempt a relocation of one population. The Service proposed listing *C. mirabilis* as an Endangered species April 14, 1989 (see BULLETIN Vol. XIV, No. 5), and the final rule was published April 5, 1990.

Two Southern Appalachian Plants

Spreading avens (*Geum radiatum*) and Roan Mountain bluet (*Hedyotis purpurea* var. *montana*) are two small perennial herbs endemic to a few scattered mountaintops and cliff faces in western North Carolina and eastern Tennessee. The spreading avens, a member of the rose family (Rosaceae), has a basal rosette of leaves and stems that grow up to 20 inches (50 centimeters) tall, topped with bright yellow flowers. Of the 16 populations that have been reported historically, 11 survive: 6 populations on privately owned lands, 4 on U.S. Forest Service and National Park Service lands, and 1 on park land managed by the State of North Carolina. Seven of the populations have fewer than 50 plants remaining.

Roan Mountain bluet is a low-growing perennial in the coffee family (Rubiaceae) that forms loose tufts up to 6 inches (15 cm) tall with bright purple flowers. Six of the seven recorded populations of this species remain, but two of these occupy a total of less than 108 square feet (10 square meters). Five populations are on privately owned lands, and one is partially on lands in Forest Service ownership.

Although the reasons for the declines of these species are not completely understood, habitat damage and loss probably have been major factors. The greatest problem in the past probably was development on the open mountain summits inhabited by these species. Such activity included the construction of trails, parking lots, roads, buildings, observation platforms, suspension bridges, and other recreational, residential, and commercial facilities. All of the surviving populations are threatened by residential and recreational development, habitat disturbance due to heavy use by hikers and climbers, collection of the plants, and natural succession. The Service proposed on July 21, 1989, that the spreading avens and Roan Mountain bluet be listed as Endangered (see BULLETIN Vol. XIV, No. 8); the final rule for both species was published April 5, 1990.

Krai's Water-plantain (*Sagittaria secundifolia*)

S. secundifolia is an aquatic perennial plant in the water-plantain family (Alismaceae). Its distinguishing characteristics include a stout, elongated rhizome, hairy filaments, and deep-green linear leaves. The species is only known to occur in the Little River system in northeast Alabama and northwest Georgia. A dozen or more local populations are scattered over approximately 25 river miles (40 kilometers). The plant typically occurs on frequently exposed shoals or rooted among loose boulders in quiet pools up to 3 feet (1 meter) in depth.

Due to its restricted range, *S. secundifolia* is extremely vulnerable to any catastrophic event, such as flooding. The clearing of the river banks for agriculture, silviculture, residential/recreational development, and surface mining contribute to water quality degradation, a major threat to the survival of this species. Other threats include garbage dumping and leaking sewage systems (which increase the growth of filamentous algae and decrease the amount of light available to *S. secundifolia* for growth and flowering), off-road vehicles that ford the river, unstable impoundments that could break, and a proposed hydroelectric impoundment. The Service proposed that *S. secundifolia* be listed as Threatened in the October 18, 1989, *Federal Register* (see BULLETIN Vol. XIV, Nos. 11-12), and the final rule was published April 13, 1990.

Arkansas Fatmucket (*Lampsilis powelli*)

This medium-sized, freshwater mussel prefers deep pools and backwater areas in the Ouachita, Saline, and Caddo River systems of central Arkansas. Water quality degradation is believed responsible for the decline of this species. Silt and sediment from the construction of impoundments, runoff from small gravel operations and mines, timber harvest operations, road construction, and agriculture affect all three river basins. The probable range of the Arkansas fatmucket has been reduced by over 40 percent (138 river miles; 222 kilometers). There are optimum habitat and good populations in only about 20 percent (62 river miles; 100 km) of the total estimated historical range. The mussel continues to be threatened by impoundment construction, channel alteration, gravel dredging, and other activities in the watershed that degrade water quality. The Service proposed to list the Arkansas fatmucket as a Threatened species on July 27, 1989 (see BULLETIN Vol. XIV, No. 8), and the final rule was published April 5, 1990.

Dusky Seaside Sparrow Proposed for Removal From Endangered Species List

The Fish and Wildlife Service has proposed to formally remove the dusky seaside sparrow (*Ammodramus maritimus nigrescens*), a small, dark songbird, from the List of Endangered and Threatened Wildlife and Plants (F.R. 4/25/90). This subspecies became extinct on June 16, 1987, when the last dusky, an old male referred to by his keepers as Orange Band, died at a captive breeding facility in Florida (see BULLETIN Vol. XII, Nos. 5-6).

Historically, duskies occurred only in a small area near Titusville in Brevard County, Florida. The salt marsh habitat to which this bird was restricted was destroyed or changed by impoundments (a means of mosquito control), drainage, development, and fire. By 1980, when the last few duskies were collected for a captive breeding program, only six of the birds remained—all of them males. After repeated searches failed to locate any female duskies, an attempt was made to cross the males with females of the

Scott's seaside sparrow (*Ammodramus maritimus peninsulae*). Unfortunately, the advanced age of the captive dusky males created difficulties for the cross-breeding program, and none of the hybrid offspring have survived.

The proposed delisting of the dusky also would revoke the bird's designated Critical Habitat. In the meantime, the Service is reevaluating management options for the St. Johns National Wildlife Refuge, which had been established for the conservation of the dusky.

Steller Sea Lion

(continued from page 1)

Aleutian Islands, and the Kuril Islands of the Soviet Union. In 1989, 25,000 animals were counted in Alaska rookeries from the Kenai Peninsula to Kiska Island, compared to 140,000 in 1956-60. This is a drop of about 82 percent since 1960. The rate of decline is accelerating.

The causes of the decrease have not been determined, but several factors are suspected. Commercial fishing for pollock, herring, cod, salmon, and flatfishes may be reducing important prey populations for Steller sea lions. Sea lions are also taken incidentally during commercial fishing operations in the Gulf of Alaska and Bering Sea. It is estimated that foreign and joint-venture commercial trawl fisheries incidentally killed 14,000 Steller sea lions between 1973 and 1988. An unknown number of sea lions also may be shot by fishermen at rookeries, haul out sites, and in the water near boats.

Between 1963 and 1972, over 45,000 Steller sea lion pups were killed for the commercial fur trade in the eastern Aleutians and Gulf of Alaska, which may explain the initial decline in this area. (With the passage of the Marine Mammal Protection Act of 1972, the commercial take and trade of the Steller sea lion ceased. A small number of sea lions are still legally taken for subsistence purposes in Alaska.)

Other factors that may be contributing to the decline include entanglement of sea lions in marine debris, disease, predation by killer whales or sharks, and disturbance of the rookeries.

Effects of the Rule

Throughout the 240-day life of the emergency rule, the Steller sea lion will receive all of the protection authorized

under the Endangered Species Act. This reinforces the Marine Mammal Protection Act restrictions on commercial take and trade, although Alaska natives still will be permitted to take animals for subsistence purposes. In addition, under Section 7 of the Endangered Species Act, Federal agencies must ensure that any activities they authorize, fund, or carry out are not likely to jeopardize the survival of the population. If an agency finds that one of its activities may affect the sea lion, it is required to consult with NMFS on ways to avoid jeopardy.

To expedite the recovery of the Steller sea lion, NMFS is taking several emergency conservation measures:

- NMFS will use data collected from observers on commercial fishing vessels to make monthly estimates of the level of incidental kill of Steller sea lions by certain fisheries. Additional observer programs may be established in other fisheries in order for NMFS to monitor the incidental take.

- Although the Marine Mammal Protection Act prohibits the intentional lethal take of Steller sea lions in the course of commercial fishing, fishermen have not been prohibited from harassing sea lions that are interfering with their gear or catch by shooting at or near the animals. NMFS now prohibits such shooting.

- A buffer zone of 3 miles (5 kilometers) has been established around the principal Steller sea lion rookeries in the Gulf of Alaska and the Aleutian Islands. No vessels are allowed to operate within the buffer zones during the period of the emergency rule. Similarly, no person may approach on land closer than one-half mile (0.8 km) or within sight of 32 Steller sea lion rookeries. On Marmot Island, traditionally the most important Steller sea lion rookery in Alaska, no person may approach closer than 1½ miles (2.4 km) of the eastern shore. The purposes of these restrictions

are to stop individuals from shooting at sea lions, minimize disturbance of the animals, reduce incidental take in areas where high concentrations of the sea lions are expected, and facilitate enforcement. (Exceptions are provided for emergency situations, navigational transit of certain passages, scientific research permitted under the Marine Mammal Protection Act, and Alaska Natives taking animals for subsistence purposes.)

- NMFS believes that the most serious declines in sea lion numbers have occurred in Alaskan waters and adjacent areas of the U.S. Exclusive Economic Zone west of 141° W longitude. If NMFS determines that more than 675 sea lions have been killed incidentally as a result of commercial fishing operations during 1990, it will publish a notice to prohibit the kill of any additional sea lions in this area. NMFS may issue other emergency rules to allocate the number of sea lions incidentally taken among the various fisheries, close areas to fishing, or take additional actions to ensure that commercial fishing operations do not exceed the 675-animal quota.

- NMFS intends to aggressively enforce the above regulations, provide resources to cover areas where Steller sea lions are most vulnerable, initiate a TIP/Reward Program, and promote public awareness.

- NMFS has established a team to prepare a recovery plan and develop recommendations for further conservation measures. Members of the North Pacific Fishery Management Council, Marine Mammal Commission, State agencies, and other prominent scientists and environmentalists will be invited to participate in developing and implementing a recovery program.

During the life of the emergency listing rule, NMFS will proceed with consideration of a rule to give the Steller sea lion long-term protection.

New Manatee Sanctuary Established at Merritt Island National Wildlife Refuge

Robert O. Turner
Manatee Coordinator
Region 4

On March 1, the Fish and Wildlife Service established a new sanctuary for the West Indian manatee (*Trichechus manatus*) on Merritt Island National Wildlife Refuge in Brevard County, Florida. This sanctuary is the fourth one established by the Service in Florida; the first three are small sanctuaries within Crystal River National Wildlife Refuge on Florida's gulf coast.

Often called the sea cow, the manatee has an immense, grey-brown, walrus-like body, a flat, rounded tail, and paddle-like flippers. The average adult manatee is 9 feet (3 meters) long and weighs approximately 1,200 pounds (540 kilograms). Manatees eat 4 to 11 percent of their body weight daily, feeding on aquatic plants 5 to 8 hours a day. The species has a low reproductive rate; manatees do not reproduce until they are 7 to 9 years old, and then usually produce one calf every 3 to 5 years.

Manatees occur in scattered areas along the Atlantic and gulf coasts of the southeastern United States, the southern Gulf of Mexico, various Caribbean islands, and the northeastern coast of South America, but cold winter temperatures keep the United States' population concentrated in Florida's shallow coastal waters, rivers, and springs. There is no exact figure on the total number of manatees, but aerial surveys of warm-water refugia during the winter have documented approximately 1,200 animals in Florida.

Concern Over Manatee Deaths

The Fish and Wildlife Service listed the manatee as Endangered in 1967. Human activities are the major threat to this species and its habitat. Nearly half of the known manatee deaths in Florida today are due directly to human activities and

structures. Boat-related incidents account for 80 percent of the human-caused manatee mortalities in Florida. The number of deaths continues to increase as the number of boats in Florida increases. Water-control structures and locks, fishing gear, poachers, and vandals also kill manatees.

In 1989, 166 manatees died from all causes in Florida—a 25 percent increase over the total 1988 mortality. Fifty of the 1989 deaths resulted from collisions with boats. The high mortality rate is continuing in 1990, with 73 deaths in January alone. The Service is concerned that the manatee population cannot sustain this level of mortality.

Merritt Island National Wildlife Refuge and Manatee Sanctuary

The Merritt Island National Wildlife Refuge, part of the John F. Kennedy Space Center, is managed by the Service under a cooperative agreement with the National Aeronautics and Space Administration (NASA). The refuge encompasses a large area of important manatee habitat. Aerial surveys conducted during the last decade indicate that the upper Banana River portion of the refuge has the largest warm-water concentration of manatees anywhere in the United States. Peak populations occur during the spring and fall when up to 300 manatees are found in these waters. However, the Banana River also has the highest number of manatee mortalities of any waters in the State of Florida. Between 1975 and 1989, the bodies of 33 manatees that had been killed by boats or barges were recovered from the Banana River. (Boats probably were responsible for the fatalities of other manatees in the river, but biologists could not confirm the cause of death in all cases.)

To reduce the number of manatee deaths, the Fish and Wildlife Service established a new sanctuary within the refuge. The sanctuary, approximately

15 square miles (39 square kilometers) in size, is located between Cape Canaveral Air Force Station and the Kennedy Space Center, and encompasses the upper Banana River from the NASA causeway south to State Road 528. (The new sanctuary is adjacent to another portion of the upper Banana River, approximately 15 square miles in size, that NASA closed to all public access in 1962 for security reasons. This area also effectively serves as a manatee sanctuary.)

The sanctuary strengthens the protection of manatees on the refuge and restricts some forms of public use that formerly were available. No boats are allowed in the sanctuary with a gas or electric motor on board (even if the motor is not in use) at any time of the year. However, non-motorized craft, such as canoes, rowboats, sailboards, sailboats, and other human or wind-powered vessels, are permitted. The area has been posted to alert refuge visitors.

Research has demonstrated that manatees respond positively to sanctuaries. The new sanctuary will provide a large area where manatees can feed, rest, calve, and cavort without being harassed by powerboats. Habitat quality also should improve in this area. Powerboats operating in shallow water can dredge or scour grass beds and increase turbidity, thereby reducing light penetration and sea grass production. In addition, the powerboat closure will reduce the number of anglers in the area, which may allow the Banana River's fish populations to increase. Such an increase could benefit fishing in the waters surrounding the sanctuary.

The Service plans to restrict the use of motors within the sanctuary for 5 years. During this time, data concerning the effectiveness of the closure on manatees will be gathered. At the end of this 5-year period, the Service will decide whether to continue, modify, or eliminate the sanctuary.

Emergency Protection Extended for Winter-Run Chinook Salmon in the Sacramento River

The National Marine Fisheries Service (NMFS) published a new emergency interim rule in the April 2, 1990, *Federal Register* to continue providing Endangered Species Act protection to the winter run of chinook salmon (*Oncorhynchus tshawytscha*) in the Sacramento River, California. NMFS first listed this run as Threatened under a 240-day emergency rule on August 4, 1989, in

response to a major decline (see BULLETIN Vol. XV, No. 1). Since that time, NMFS has published a proposed rule to give the run long-term protection as a Threatened species (F.R. 3/20/90).

The emergency rule continues the Critical Habitat designation of the Sacramento River channel and adjacent riparian zones from the Red Bluff Diversion Dam to the Keswick Dam. NMFS

also will continue its coordination with the State of California in managing the run and the salmon's habitat, and will participate in the State's review of sport and commercial fishing regulations. The new emergency rule is effective through November 28, 1990, by which time a decision on long-term protection should be made.

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the standard appears to be justified as a result of recent western Illinois field studies of Indiana bat movements and habitat use. If the Forest Service adopts this expanded standard, it should aid in the recovery of the bat.

Region 4—Three manatees (*Trichechus manatus*) held by Sea World of Florida for rehabilitation have been released back into the wild. One manatee had been rescued after suffering cold stress, one after being struck by a motorboat, and one after being caught in a crab trap. Hutch, a 10-foot (3-meter) long male, was released April 10 at Jensen Beach, Florida, near the spot where he had been rescued. Mei, a 7.9-foot (2.4-m) long male, and Liberty, a 7.3-foot (2.2-m) long female, were released May 2 within the new Banana River Manatee Sanctuary, which is part of Merritt Island National Wildlife Refuge. (See the accompanying story in this issue of the BULLETIN.) All three manatees were marked for future identification, and radio transmitters were attached to their tails to monitor their movements.

Seventy-three manatee deaths were reported in Florida in January, the largest monthly total since surveys began in 1974. (Another 8 deaths were reported from other States.) Most of the deaths (45) were attributed to extremely cold weather in Florida in late December 1989. Seven of the remaining deaths were from boat and barge collisions, seven were from natural causes, and fourteen were from undetermined causes. Four of the fourteen manatees that had died from undetermined causes were dependent calves.

Another 14 manatee deaths were reported in Florida during February, of which 9 were from undetermined causes (one of which was a dependent calf), 4 were from watercraft collisions, and 1 was from natural causes.

The National Wildlife Federation, with the financial assistance of Patagonia Inc., the Mary Reynolds Babcock Foundation, and the George Bullard Foundation, brought 24 experts near Live Oak, Florida, on March 28-30 to discuss the biology and management of the red-cockaded woodpecker (*Picoides borealis*). Approximately 100 organizations were contacted for recommendations on meeting participants and agenda items. The participants reached a consensus on many key points during the course of the meeting, which was managed by a team of mediators from the Southeast Negotiation Network of Georgia Tech. University. Of particular interest was the fact that none of the current recovery plan recommendations were refuted. However, the need for additional recovery measures and further specification of the existing

recommendations was identified, based on new research findings or group consensus. The final report from the summit should be available soon from the National Wildlife Federation.

Due to interest generated by a petition to list the Louisiana black bear (*Ursus americanus luteolus*) and the Fish and Wildlife Service's consideration of a listing proposal, the State of Mississippi has recommended using Pittman-Robertson funds to conduct research on black bear populations and their habitat. The Louisiana black bear historically occurred in the southern half of Mississippi, but now occurs in small numbers in the Mississippi Delta and in the loess bluffs bordering the Mississippi River floodplain.

The Fish and Wildlife Service has received the final report on a 2-year status survey of sea-beach amaranth (*Amaranthus pumilus*), conducted by the North Carolina Plant Conservation Program (see the Region 4 news in BULLETIN Vol. XIV, No. 5). This sand-binding plant, a Category 2 listing candidate, once grew on Atlantic beaches from Nantucket, Massachusetts, to South Carolina, but now survives on only a few sites in North and South Carolina. Seawalls, riprap, and other beach stabilization techniques are believed to threaten this plant by altering its habitat. Hurricane Hugo reportedly devastated many of the beaches where large populations of seabeach amaranth occurred, but the effect this natural event may have on the species' long-term survival is unknown.

New populations of two plant species, bunched arrowhead (*Sagittaria fasciculata*) and Cain's reedgrass (*Calamagrostis cainii*), have been discovered. The Endangered bunched arrowhead site was discovered in Henderson County, North Carolina, by biologists from the Fish and Wildlife Service's Asheville Field Office and a North Carolina Natural Heritage Program contractor. The new population of Cain's reedgrass, a Category 2 listing candidate, was discovered on Blue Ridge Parkway land in the Craggy Mountains of North Carolina. This species previously was known only from Tennessee. The Asheville Field Office is working with the National Park Service to redesign a planned visitor facility so that the rare grass and its habitat are maintained.

Region 5—The 1990 midwinter bald eagle (*Haliaeetus leucocephalus*) survey in New Jersey yielded encouraging results. Seventy bald eagles were recorded during the 2-day event—a significant increase from 1989 when 48 eagles were recorded. Also of special note, the number of nesting bald eagle pairs in the State increased this year to 4—the first time since the early 1970's that New Jersey has had more than 1 breeding pair. The increase in eagle activity can be attributed to the joint

efforts of the Fish and Wildlife Service, Canada, and northeastern States.

The State of New Jersey recently proposed over 300 plant species, including all federally listed species and listing candidates, for inclusion in its own endangered plant list. Although the State list itself does not afford additional protection, State regulatory agencies will take measures to conserve these plants through their respective program authorities.

Professional biologists and volunteers from Maine to North Carolina have begun the annual piping plover (*Charadrius melodus*) survey along the Atlantic coast. Last year's survey results from the Atlantic coast States showed that the number of plovers increased to 709 birds, up from 644 in 1988. The increases in the number of breeding pairs throughout the region indicates that the intense cooperative management and education effort being conducted by Federal, State, and private conservation agencies is working.

Region 6—On April 16, the Woundfin Recovery Team met in St. George, Utah, and was asked by the Service to include another Endangered fish, the Virgin River chub (*Gila robusta semidnuda*), in the recovery effort. The new Virgin River Endangered Fishes Recovery Team is now working on an ecosystem recovery plan that will include both the Virgin River chub and the woundfin (*Plagopterus argentissimus*).

Following the meeting, the recovery team members monitored several stations within portions of the Virgin River drainage that were chemically treated in late 1988 and 1989 to eliminate red shiners (*Notropis lutrensis*). (See BULLETIN Vol. XIV, Nos. 1-2.) The red shiner, a species not native to the Virgin River, competes with the woundfin and is one of the primary reasons for the species' decline. The monitoring showed that several red shiners were present. The persistence of the red shiner is a setback to recovery of the woundfin in the Virgin River.

Region 7—Researchers at the University of Alaska in Fairbanks were successful recently in producing the first sporophyte (i.e., the spore-producing phase of a plant) of the Endangered Aleutian shield fern (*Polystichum aleuticum*). Two previous attempts to propagate the plant in vitro were unsuccessful. One of the rarest plants in Alaska, the Aleutian shield fern was listed in 1988 as Endangered. Further studies of the fern's life history and reproductive biology have been recommended to help identify the possible causes of the plant's rarity.

Region 9—The Fish and Wildlife Service has increased its efforts to foster African elephant (*Loxodonta africana*) conservation by assisting African nations in anti-poaching efforts. The Service's Office of Management Authority represented the United States at an interna-

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tional conference of potential elephant assistance donors in Paris on April 5-6, with delegations from 20 other nations and 6 major conservation groups. The conference produced a declaration of support for African nations and a commitment to consider increased financial assistance. The U.S. already has provided more assistance for the elephant this year than any other nation, with the Service dedicating \$500,000 of its funds to anti-poaching efforts and the Agency for International Development's biodiversity program dedicating another \$2 million for general elephant conservation. The Service's funds will be used to assist the anti-poaching efforts of nations with significant regional elephant populations (such as Zambia and Gabon), for holding a law enforcement seminar in Tanzania for African game rangers, and for preparing master conservation plans for elephants in key nations.

The Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) has been strengthened by two recent appointments. The Fish and Wildlife Service has assigned law enforcement special agent John Gavitt to serve as the CITES enforcement officer for the next 2 years, and the government of the Netherlands has assigned Mr. Ger Van Vliet to serve as the CITES plants officer. Mr. Van Vliet is the first full-time biologist working on plants for CITES. The U.S. and the Netherlands are paying their expenses.

The annual U.S. contribution to CITES, which comes through the Department of State, has regularly been supplemented by special contributions from the Service earmarked for specific purposes. For example, the Office of Management Authority contributes to paying the expenses of delegates from developing nations for travelling to CITES meetings and helps pay for studies on such topics as the effects of the parrot and ivory trades on wild populations.

May 1990

Vol. XV No. 5

ENDANGERED SPECIES

Technical Bulletin

Department of the Interior, U.S. Fish and Wildlife Service, Washington, D.C. 20240



BOX SCORE LISTINGS AND RECOVERY PLANS

Category	ENDANGERED		THREATENED		LISTED SPECIES TOTAL	SPECIES WITH PLANS
	U.S.	Foreign Only	U.S.	Foreign Only		
Mammals	52	244	8	22	326	25
Birds	76	145	9	1	231	59
Reptiles	15	59	17	14	105	24
Amphibians	6	8	5	0	19	5
Fishes	51	11	33	0	95	47
Snails	3	1	6	0	10	7
Clams	35	2	1	0	38	23
Crustaceans	8	0	1	0	9	4
Insects	11	1	7	0	19	12
Arachnids	3	0	0	0	3	0
Plants	173	1	56	2	232	105
TOTAL	433	472	143	39	1087*	311**

Total U.S. Endangered **433** (260 animals, 173 plants)

Total U.S. Threatened **143** (87 animals, 56 plants)

Total U.S. Listed **576** (347 animals, 229 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 260 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: 51 fish & wildlife
36 plants

May 31, 1990

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