

ENDANGERED SPECIES

Technical Bulletin

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

Status of Endangered Species Recovery Program is Detailed in Report to Congress

The California condor (*Gymnogyps californianus*), southern sea otter (*Enhydra lutris nereis*), Lee pincushion cactus (*Coryphantha sneedii* var. *leei*), and Devil's Hole pupfish (*Cyprinodon diabolis*) are among the 41 percent of our nation's Endangered and Threatened species whose populations are now stable or increasing, according to a report to Congress recently released by the Fish and Wildlife Service.

The report, "Endangered and Threatened Species Recovery Program," summarizes the status of the 581 U.S. plants

and animals that were listed federally as Endangered or Threatened as of October 1, 1990. According to the report, 38 percent of these listed species are still declining, while the exact status of about 19 percent is unknown.

About two percent of the plants and animals listed are believed to be extinct. Determining whether or not a species is extinct can be difficult, and most in that category were probably extinct before passage of the Endangered Species Act. Such species are proposed for removal from the list when scientists believe there

is no longer any possibility of finding survivors in the wild.

The report shows that the majority of species considered improving are mammals, birds, or plants; bird and fish species are reported as most stable. Invertebrates, including snails, clams, insects, and crustaceans, are most prevalent among the species whose status is unknown. Freshwater mussels comprise 75 percent of the invertebrates known to be declining.

(continued on page 9)

History on the Wing: California Condors Restored to Home Skies

Ann Haas

Following their October airlift to a temporary cliffside residence, an achievement that the *Los Angeles Times* termed "a momentous step toward the revival of an endangered species," two captive-bred California condors (*Gymnogyps californianus*) were released on January 14 to the "rugged wilderness of Ventura County to reclaim their prehistoric heritage."

The pair, Xewe, a 9-month-old female hatched at the Los Angeles Zoo, and Chocuyens, an 8-month-old male

(continued on page 15)



"How much longer?" young California condors Xewe and Chocuyens seemed to ask from inside the netted patio of their cliffside residence before their release January 14 less than 100 miles from Los Angeles. The two Andean condor companions also shown here will be recaptured prior to the next California condor release and sent to Colombia, South America, where they are native.

photo by David Clendenen



(Service) and Reclamation have developed “reasonable and prudent alternatives” which, if carried out, would relieve the jeopardizing situation. In order to protect the shortnose sucker (*Chasmistes brevirostris*) and the Lost River sucker (*Deltistes luxatus*), Reclamation has agreed to manage lake levels in recognition of the biological needs of the species, aerate Clear Lake to ensure adequate dissolved oxygen and open water during the winter, monitor water quality, and make structural changes to ensure enhanced survival and reproduction capabilities. As a result of implementing these alternatives, there will be no current reduction of irrigation flows from Upper Klamath or Clear Lake.

Both agencies expressed appreciation to water users in the Klamath Basin for the cooperation demonstrated through voluntary water conservation. These initiatives made a difference in the formulation of reasonable and prudent alternatives for protecting the fish species.

* * *

The Oregon Military Department has obtained funds to monitor the Oregon silverspot butterfly (*Speyeria zerene hippolyta*) and its habitat on Camp Rilea from 1991 to 1993 and to develop a management plan for this Threatened insect on the base. One sighting has already been reported, confirming the continued presence of the Clatsop Plain population for 1991. The project is being accomplished under contract with Dr. Paul Hammond, who has been involved in a significant amount of work for the species.

* * *

Staff biologists from the Fish and Wildlife Service's Sacramento, California, Field Office met with the Bureau of Reclamation, the National Marine Fisheries Service, and the California Department of Fish and Game to assist Reclamation in modifying a Central Valley Project to protect the estimated winter run of 191 chinook salmon (*Oncorhynchus tshawytscha*) in the upper Sacramento River. Reclamation will maintain 56.5° F (13.6° C) at the mouth of Cottonwood Creek

(continued on next page)

Regional endangered species specialists have reported the following news:

Region 1 - After a consultation under Section 7 of the Endangered Species Act,

resulting in a “jeopardy” Biological Opinion to two Endangered fish species from the Bureau of Reclamation’s Klamath Project, the Fish and Wildlife Service

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Regional News

(continued from previous page)

through mid-August, 58.5° F (14.7° C) in late August, and 59° F (15° C) in September. Because the winter-run chinook spawned earlier and farther upstream than usual, this objective should provide successful incubation and rearing conditions for winter-run salmon eggs and fry in the upper Sacramento River.

* * *

With representatives from other affected agencies, biologists from the Service's Sacramento office participated in negotiating sessions about the Lower Mokelumne River Hydroelectric Project, with the goal of establishing interim and long-term measures to protect chinook salmon in the river. Because of continued habitat degradation and the decline of salmon runs to fewer than 300 fish during the past 2 years, the Federal Energy Regulatory Commission is moving to reopen the license for this project based in part on information that the Service provided. California Department of Fish and Game staff also participated in negotiations.

* * *

The West Coast clapper rail recovery team met at San Francisco Bay National Wildlife Refuge to develop means to manage predators; protect, improve, and restore habitat; and develop a trial captive breeding program for the 470 light-footed clapper rails (*Rallus longirostris obsoletus*) and 400 California clapper rails (*Rallus longirostris levipes*) in the United States.

* * *

Following the approval of a Mojave desert tortoise (*Gopherus agassizii*) habitat conservation plan, the Service issued a 3-year permit under Section 10 of the Endangered Species Act to Clark County, Nevada, and the cities of Las Vegas, North Las Vegas, Henderson, and Boulder City, to allow the taking of 3,710 tortoises incidental to development activities. Under the terms of the permit and habitat conservation plan, Clark County is authorized to license the development of 22,352 acres (9,045 ha) in Las Vegas Valley, in exchange for establishing

at least 400,000 acres (161,880 ha) of conserved desert tortoise habitat in outlying areas of Clark County. Developers will pay the County a fee of \$550 per acre to fund the mitigation program and "tortoise management areas." Elected officials applauded the plan for conserving desert tortoise habitat and enabling economic development in Las Vegas Valley.

The Nature Conservancy (TNC) plans to buy 5 or 6 ranches from willing sellers in southern Nevada and transfer the properties to Clark County at cost. The county will then lease the lands to TNC. Management will be accomplished by the National Park Service and the Bureau of Land Management primarily, along with a county-formed oversight group that includes TNC.

To date, TNC has bought the grazing privileges, water rights, and improvements on a 425,000-acre (172,000 ha) ranch that is entirely on public land administered by the Bureau of Land Management. Located in the Piute Valley, the ranch includes 160,000 acres (64,750 ha) of the highest quality desert tortoise habitat in the State.

Acting primarily as acquisition agent, TNC is purchasing and retiring the privileges for grazing these lands, an activity that has the widest-ranging impact on the tortoises in the Threatened Mojave Desert population. As a grazing entity, which counties are not, TNC can be granted the "non-use" of grazing allotments on public lands. James Moore, the organization's Desert Tortoise Habitat Conservation Plan Coordinator in Las Vegas, termed public and private sector cooperation in the long-term recovery goal a "conservation accomplishment" involving agency personnel and ranchers, miners, hunters, off-road vehicle users, developers, and environmentalists.

Negotiations are under way for two other properties that include approximately 310,000 acres (125,460 ha) of desert tortoise habitat. Once the southern tortoise preserve is established, TNC will begin work for a northern preserve, as part of the long-term Habitat Conservation Plan now under development. The goal is to encompass an entire eco-

Notice

We regret that, due to a staffing shortage, production of the *Endangered Species Technical Bulletin* has been experiencing delays. Your patience while we deal with this difficult situation is appreciated.

system. Jim Moore added, "These are envisioned as in-perpetuity acquisitions to preserve not only viable populations of desert tortoises, but all other Mojave Desert endemics as well."

* * *

The Service's Reno, Nevada, Field Office has issued a non-jeopardy biological opinion on the Bureau of Land Management's (BLM) proposed licensing of livestock use on public land in desert tortoise habitat in southern Nevada. BLM proposes to implement two ways of managing livestock grazing within tortoise habitat. Prescription 1 restricts grazing during the spring (March 1 to June 14) to reduce the trampling of desert tortoises by horses, cattle, and sheep, and reduce their competition for forage. Prescription 2 includes no seasonal restriction on grazing.

Grazing Prescription 1 will manage 1,798,000 acres (726,390 ha) of desert tortoise habitat to maintain or achieve viable tortoise populations. Prescription 2 will manage 1,376,000 acres (557,085 ha) of desert tortoise habitat for the purpose of ensuring that tortoise recruitment is sufficient to maintain stable tortoise populations. Although the incidental take of tortoises is unquantifiable, the opinion will allow the degradation of 3,174,000 acres (1,284,520 ha) of tortoise habitat.

* * *

Region 2 - A second year of drought in the Northwest Territories, Canada, has taken its toll on whooping crane (*Grus americana*) chick numbers, discouraging nesting even by experienced pairs and making eggs and hatchlings more accessible to predators.

(continued on page 9)

Fifty-six Animals and Plants Proposed in August-October 1991 for Endangered Species Act Protection

Fifty-six species — 7 animals and 49 plants — were proposed by the Fish and Wildlife Service during August through October 1991 for listing as Endangered or Threatened. If these proposals become final, Endangered Species Act protection will be extended to the following:

Coastal California Gnatcatcher (*Poliophtila californica californica*)

The coastal California gnatcatcher, an insectivorous, non-migratory songbird, occurs only in several distinctive subassociations of the coastal sage scrub plant community in southern California and northwestern Baja California, Mexico. As late as the 1940's, the California gnatcatcher was considered locally common, but by the 1960's biologists noted drastic population declines, due primarily to habitat loss. Today, fewer than 2,300 breeding pairs are estimated to remain in California, and the subspecies has been proposed by the Service for listing rangewide as Endangered (F.R. 9/17/91).

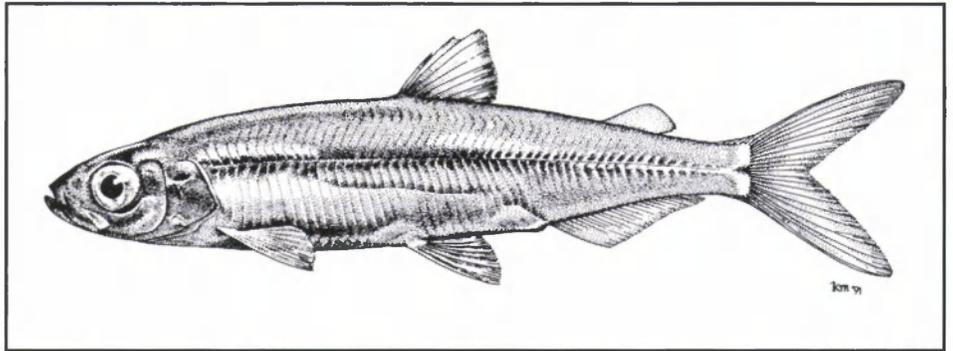
In the United States, published data indicate that up to 90 percent of the vegetation upon which the California gnatcatcher depends — low-growing, summer deciduous and succulent plants — has been lost to urban and agricultural development. In fact, the coastal sage scrub community is considered one of the most depleted habitat types in the United States, and its status is declining in Mexico as well. As a result, 1 animal associated with sage scrub, the Stephens' kangaroo rat (*Dipodomys stephensi*), was listed in 1988 as Endangered, and over 40 other animal and plant taxa dependent on this habitat are being considered for listing.

Several land-use planning efforts that address, in part, the issue of conserving coastal sage scrub habitat in California have been initiated at the State, county, and local levels. The Service is participating in these efforts and supports their conservation objectives; however, these plans are in the early stages of develop-



photo by Arnold Small

California gnatcatcher



drawing by Kendal Morris

Delta smelt

ment, and it is likely to be years before they are completed, funded, and implemented. In the meantime, habitat loss and fragmentation continue.

Delta Smelt (*Hypomesus transpacificus*)

The Delta smelt, a small, nearly translucent fish with a 1-year life cycle, is restricted to Suisun Bay and the Sacramento/San Joaquin River estuary (the Delta) near San Francisco Bay. It is the only smelt endemic to California and the only true native estuarine fish found in the Delta. This species is adapted to the seawater/freshwater mixing zone within a salinity range of 2 to 12 parts per thousand.

As recently as the early 1970's, the delta smelt was one of the most common and abundant pelagic fish caught by California Department of Fish and Game trawl surveys in the Delta. Over the past 20 years, however, its population has plummeted nearly 90 percent, due primarily to extensive habitat modification and loss. Contributing to the decline are the diversion of freshwater from river systems that supply water to the Delta habitat, California's prolonged drought, the presence of non-native aquatic species that disrupt the smelt's food chain, and degradation of water quality.

The annual export of approximately 6 million acre-feet of fresh water away from

(continued on next page)

Listing Proposals

(continued from previous page)

the estuary by Federal and State projects, with an additional 2 to 3 million acre-feet diverted by private Delta water users, has allowed the intrusion of higher-salinity seawater into Delta marshes. This has restricted the delta smelt's spawning and nursery areas to less favorable river channel habitat. Additionally, the rates at which water is exported from the Delta by the Federal Central Valley Project and the State Water Project pumping stations actually cause some Delta channel waters to reverse direction and flow upstream, which can seriously disrupt fish migrations and cause larval and juvenile fish to die.

Because the factors that have reduced the delta smelt's habitat pose a continuing threat, the Service has proposed to list this fish as a Threatened species (FR. 10/3/91). In addition, the Service proposed to designate the following areas as Critical Habitat for the delta smelt: all water and submerged lands below the high tide mark in Suisun Bay, the length of Montezuma Slough, portions of the Sacramento and San Joaquin Rivers, and portions of the Delta and adjacent waters. (See map of the proposed area in the October 3, 1991, *Federal Register*.) If the listing and Critical Habitat proposals are approved, Federal agencies will be required not only to avoid activities that might jeopardize the smelt's survival but also those that might adversely modify its Critical Habitat.

Mitchell's Satyr (*Neonympha mitchellii mitchellii*)

Now one of the most geographically restricted butterflies in North America, the Mitchell's satyr once occurred at approximately 30 locations in 4 States. Overcollection and loss of its unusual fen habitat have reduced its range to 15 sites in southern Michigan and northern Indiana. Butterfly numbers at several sites are believed to be very low, and these populations may not be viable.

Due to the threat of imminent extinction from overcollection, Mitchell's satyr was temporarily listed (for 240 days) as

Endangered on June 25, 1991, under the emergency listing provisions of the Endangered Species Act. (See feature in *Bulletin* Vol. XVI, Nos. 7-8.) In the September 11, 1991, *Federal Register*, the Service proposed to give this butterfly long-term protection as Endangered. Surveillance of breeding sites during the butterfly's annual 3-week flight season to prevent unauthorized collecting began following the emergency listing and will be essential to the survival of the Mitchell's satyr. The Service also will begin working with private landowners to preserve existing fens used by this butterfly.

Goliath Frog (*Conraua goliath*)

The aptly named Goliath frog of central Africa is the largest species of frog in the world. Specimens weighing up to 7.2 pounds (3.3 kilograms) with a total length of 32 inches (81 centimeters) have been recorded, and there are reports of even larger individuals. This species is avidly hunted by people who consider the meat a delicacy.

Goliath frogs are found along major rivers traversing dense tropical rainforest in parts of Equatorial Guinea and southwestern Cameroon. Within this range, the frogs reportedly are rare and have extremely selective ecological requirements: rapids and cascades with a sandy bottom and very clean, slightly tannic, oxygen-rich water. Deforestation in the region has degraded or reduced this type of habitat.

A new problem, and one that is causing much of the immediate concern, is the capture and export of live Goliath frogs. Because of its huge size, the frog is becoming increasingly popular as a curiosity for public exhibition and private collecting. Advertisements have shown an asking price of up to \$2,500 for adult Goliath frogs. One U.S. dealer reportedly imported 50 individuals and attempted to enter some in the well-known Frog Jump Jubilee in Calaveras County, California. Imports and exports of the Goliath frog are not regulated by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Due to its rare status, reduced habitat, and vulnerability to commercial overexploitation, the Goliath frog has been proposed for listing as Threatened (FR. 9/12/91).

Three Foreign Butterflies

On September 10, the Service proposed to list three foreign species of swallowtail butterflies as Endangered:

- **Homerus swallowtail (*Papilio homerus*)** - This butterfly has a wingspan of about 6 inches (150 millimeters). Its wings are black or dark brown, the upper surfaces having broad yellow bands and the lower surfaces having narrower yellow bands and blue spots. The species is known only from the island of Jamaica in the West Indies.

- **Corsican swallowtail (*Papilio hospiton*)** - This short-tailed species of butterfly is smaller, with a wingspan of about 3 inches (75 mm). It is primarily black and yellow in color, with blue and red markings. As indicated by its common name, the Corsican butterfly is found only on the Mediterranean islands of Corsica (France) and Sardinia (Italy).

- **Luzon peacock swallowtail (*Papilio chikae*)** - A long-tailed butterfly, beautifully marked in green-black, red, and purple, this species has a forewing length of about 2 inches (55 mm). It is known from the island of Luzon in the Philippines.

Habitat destruction is a problem affecting all three species. Excessive collection by butterfly enthusiasts and commercial dealers is another serious threat. For example, a female Homerus butterfly was advertised for sale several years ago for \$2,800. If these species are listed under the Endangered Species Act, it will be illegal to import them into the United States without a Federal permit.

16 Moloka'i Plants

Sixteen species of plants native to the island of Moloka'i in the Hawaiian Islands were proposed for listing protection in the September 20, 1991, *Federal Register*. All but one are found only on

(continued on page 6)

Listing Proposals

(continued from page 5)

Moloka'i; the other species also occurs on the island of Hawai'i (the "Big Island").

The island of Moloka'i, fifth largest in the Hawaiian archipelago, consists mainly of the remnants of three shield volcanoes. Its gently sloping to very steep topography supports a variety of habitat types, and the 16 recently proposed taxa are found in areas ranging from coastal dunes and cliffs through dry shrublands to wet montane forests.

The unique native vegetation of the Hawaiian Islands has undergone extreme alteration as a result of ranching activities, deliberate and accidental introductions of non-native plants and animals, and agricultural development. Competition with alien plants and continuing habitat modification or destruction due to feral animals are currently the main threats facing the following taxa:

- *Bidens wiebkei*, known in the Hawaiian language as *ko'oko'olau* — a perennial herb in the aster family (Asteraceae). The 5 known populations of this species total no more than 60 individual plants.

- *Brighamia rockii*, or *pua 'ala* — a member of the bellflower family (Campanulaceae) with an unbranched, thickened, succulent stem and fleshy leaves.



Brighamia rockii

drawings by Yevonn Wilson-Ramsey, reprinted from Manual of the Flowering Plants of Hawaii ©, courtesy of the University of Hawaii Press

- *Canavalia molokaiensis*, or *'awikiwiki* — a perennial climbing herb in the pea family (Fabaceae) with 7 known populations totalling about 50 plants.

- *Clermontia oblongifolia* ssp. *brevipes*, or *'oha wai* — a shrub or small tree in the bellflower family with a single known surviving individual.

- *Cyanea mannii*, or *haha* — a branched, woody shrub in the bellflower family with 6 known populations totalling approximately 40 individuals.

- *Cyanea procera* — an unbranched, palm-like tree with only two known surviving individuals.

- *Hedyotis mannii*, or *pilo* — a small perennial in the coffee family (Rubiaceae), also with only two known surviving plants.

- *Hibiscus arnottianus* ssp. *immaculatus*, or *koki'o ke'oke'o* — a small tree in the mallow family (Malvaceae) with 50 known individuals in 4 populations.

- *Melicope reflexa*, or *alani* — a sprawling shrub in the citrus family (Rutaceae).

- *Phyllostegia mannii* — a non-aromatic member of the mint family (Lamiaceae), growing as a climbing vine with a known population of four plants.

- *Pritchardia munroi*, or *loulu* — a tree in the palm family (Arecaceae) with a single known surviving specimen in the wild.

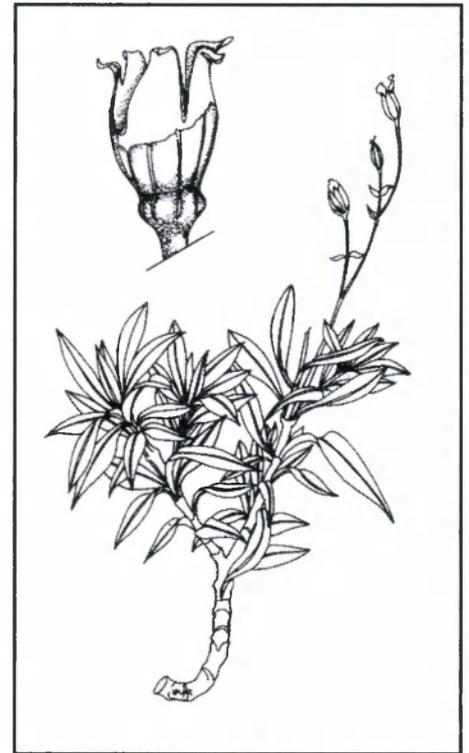
- *Schiedea bydgatei* — a low-growing perennial in the pink family (Caryophyllaceae).

- *Silene alexandri* — another perennial in the pink family, with a known population of 10 individuals.

- *Silene lanceolata* — a related perennial plant. It is the only species among the 16 proposed taxa in this group that is currently found on an island other than Moloka'i; 3 populations survive on the island of Hawai'i.

- *Stenogyne bifida* — a non-aromatic perennial herb in the mint family, now known from 3 populations containing only about 10 individuals.

The 15 taxa above were proposed for listing as Endangered. A somewhat less



Silene lanceolata

critical classification was proposed for the following:

- *Tetramalopium rockii* — a prostrate shrub in the aster family that forms complexly branching mats. Because the range and numbers of this species have not been reduced as much as those of the other 15 taxa, *T. rockii* was proposed for listing as Threatened rather than Endangered; however, the protection it would receive under this classification would be essentially the same.

23 Kaua'i Plants

The problems facing the above Moloka'i plants also threaten another 23 Hawaiian species that were proposed October 30 for listing as Endangered. Sixteen of this group are endemic to the island of Kaua'i; the other seven are or were found on Kaua'i and the islands of Ni'ihau, O'ahu, Moloka'i, Maui, and/or Hawai'i.

Kaua'i is the northernmost and oldest of the eight major Hawaiian Islands. This highly eroded island, characterized by deeply dissected canyons and steep ridges, was formed about 6 million years ago by a single shield volcano. Because of

(continued on next page)

Listing Proposals

(continued from previous page)

its age and relative isolation, levels of floristic diversity and endemism are higher on Kaua'i than on any other island in the Hawaiian archipelago. The following 23 species proposed for listing as Endangered are distributed throughout Kaua'i and grow in a variety of vegetation communities (grassland, shrubland, and forests), elevational zones (coastal to montane), and moisture regimes (dry to wet):

- *Brighamia insignis*, or 'olulu — an unbranched plant with a tapering, succulent stem topped by a rosette of fleshy leaves. This species was once found on the privately owned island of Ni'ihau but may now be extirpated there.

- *Cyanea assarifolia*, or haha — a sparsely branched shrub bearing heart-shaped leaves, with a sole known population of fewer than 20 individuals.

- *Cyrtandra limabuliensis*, or ha'iwale — an unbranched to sparsely branched shrub in the African violet family (Gesneriaceae).

- *Delissea rhytidosperra* — a shrub in the bellflower family with one known population consisting of five plants.

- *Diellia laciniata* — a fern in the spleenwort family (Aspleniaceae) that grows in tufts of three or four light-green, lance-shaped fronds.

- *Exocarpos luteolus*, or heau — a shrub in the sandalwood family (Santalaceae).

- *Hedyotis cookiana*, or 'awiwi — a small, highly branched shrub that has apparently been extirpated from the islands of Hawai'i, Moloka'i, and O'ahu. One population is believed to survive on Kaua'i.

- *Hibiscus clayi* — a shrub or tree with dark red flowers borne singly at the ends of the branches.

- *Lipochaeta fauriei*, or nehe — a perennial herb in the aster family with fewer than 70 known individuals in 5 populations.

- *Lipochaeta micrantha* — a related plant that can be distinguished from the two other *Lipochaeta* species endemic to Kaua'i by the smaller number of disk florets.

- *Lipochaeta waimeaensis* — the third Kaua'i endemic in this genus, with fewer than 10 known plants scattered over a small site on the rim of Waimea Canyon.

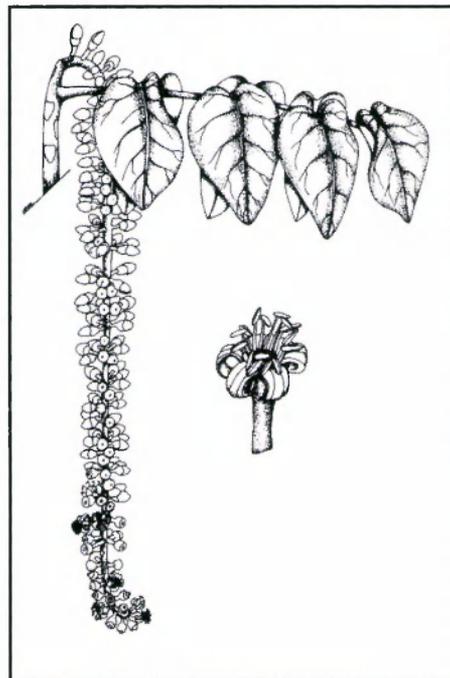
- *Lysimachia filifolia* — a small shrub in the primrose family (Primulaceae) that also occurs on the island of O'ahu.

- *Melicope haupeensis*, or alani — a tree in the citrus family with only two known surviving individuals.

- *Melicope knudsenii* — a related species that was considered "very common" in the 1920's but now numbers only 23 to 33 trees.

- *Melicope pallida* — another similar species, which also occurs on the island of O'ahu and totals about 75 known trees.

- *Melicope quadrangularis* — the fourth *Melicope* species from Kaua'i recently proposed for listing, *M. quadrangularis* was considered extinct until one adult plant and two seedlings were found in the Wahiwawa Bog area of Kaua'i.



Munroidendron racemosum

- *Munroidendron racemosum* — a tree in the ginseng family (Araliaceae), this species is the only member of its genus, which is endemic to the island of Kaua'i.

- *Nothocestrum peltatum*, or 'aiea — a small tree in the nightshade family (Solanaceae) with 7 known populations totalling 12 individuals.

- *Peucedanum sandwicense*, or makou — an erect or sprawling herb in the parsley family (Apiaceae) with compound leaves and hollow stems that arise from a short, perennial stem. Small populations of this species are found on the islands of Kaua'i, Moloka'i, Maui, and O'ahu.

- *Phyllostegia waimeae* — a non-aromatic perennial in the mint family. One of the two historically known populations has not been seen in 40 years, and the other consists of a single plant.

- *Pteralyxia kauaiensis*, or kaulu — a tree in the dogbane family (Apocynaceae), one of only two species in this endemic Hawaiian genus.

- *Schiedea spergulina* — a tall subshrub with two recognized varieties (*S. s. var. spergulina* and *S. s. leiopoda*).

- *Solanum sandwicense*, or popolo'aiakeakua — a large, sprawling shrub in the nightshade family. This species once occurred on O'ahu but now apparently survives only on Kaua'i, where there are about 15 known individuals.

Seven Coastal California Plants

Seven plant taxa from along the California coast were proposed for listing protection in two separate groups during September and October. Two of the plants are restricted to coastal freshwater marsh habitat:

- marsh sandwort (*Arenaria paludicola*) — a slender perennial herb in the pink family. Historically, this species occurred in four areas of California and in the State of Washington, but today there is only one known population of about 10 individuals at a site in San Luis Obispo County, California. Wells planned to provide drinking water for a proposed housing development could alter the hydrological conditions needed for this water-dependent plant.

- Gambel's watercress (*Rorippa gambellii*) — an herbaceous perennial in

(continued on page 8)

Listing Proposals

(continued from page 7)

the mustard family (Brassicaceae) that produces dense inflorescences of white flowers. It was reported historically from about a dozen locations in southern California and from near Mexico City, but only three populations are known to remain, all within San Luis Obispo County. One of these populations occurs at the sole remaining *A. paludicola* site and faces the same threat. Another *R. gambellii* population is in danger of encroachment by nearby sand dunes that were eroded from off-road vehicle use. The third population depends on water that is used for agriculture.

Because of these threats, *A. paludicola* and *R. gambellii* were proposed on September 30 for listing as Endangered species.

A few weeks later, on October 24, the Service proposed to list another five coastal California plants for listing as Endangered. These taxa have been reduced in range to sedimentary deposits in Santa Cruz and Monterey Counties. Four of the five of the plants are spineflowers in the genus *Chorizanthe*, which is part of the buckwheat family (Polygonaceae):

- Ben Lomond spineflower (*C. pungens* var. *hartwegiana*);
- Monterey spineflower (*C. pungens* var. *pungens*);
- Scott's Valley spineflower (*C. robusta* var. *hartwegii*); and
- robust spineflower (*C. robusta* var. *robusta*).

The fifth plant, the Ben Lomond wallflower (*Erysium teretifolium*), is a distinctly thread-leaved, yellow-flowered member of the mustard family (Brassicaceae).

Three of the five taxa (*C. pungens* var. *hartwegiana*, *C. robusta* var. *hartwegii*, and *E. teretifolium*) grow only on sandstone and mudstone soils in the Santa Cruz Mountains. Sand mining and residential development are the main threats to these plants. The other two (*C. pungens* var. *pungens* and *C. robusta* var. *robusta*) are restricted to sandy soils along the coast in southern Santa Cruz and northern Monterey Counties. Much of

their habitat has been destroyed or degraded by urbanization, agricultural development, introductions of non-native plants for dune stabilization, and military activity at Fort Ord.

American Chaffseed (*Schwalbea americana*)

This plant, a tall herb in the figwort family (Scrophulariaceae), is the only species in its genus. It is distinguished by its large, showy, purplish-yellow flowers that are borne on a spike-like raceme. Once a widely distributed species, the American chaffseed was known historically from 78 sites in 15 States. Habitat modification, however, has reduced its known range to 18 sites in 6 States (North Carolina, South Carolina, Florida, Georgia, Mississippi, and New Jersey). The species is apparently extirpated in Massachusetts, Connecticut, New York, Delaware, Maryland, Virginia, Kentucky, Tennessee, and Alabama.

The American chaffseed grows in sandy, acidic soils within habitat generally described as open, moist pine flatwoods, savannas, and grassedge systems. This shade-intolerant species depends on factors such as fire, mowing, or fluctuating water tables to maintain the crucial open to partly-open conditions it requires. Wildfire suppression has eliminated one of the most important natural means by which open habitat was maintained, and vegetational succession is overwhelming some populations. Other sites have been lost to urbanization and incompatible forestry or agricultural practices. Because of continuing threats to the species, the American chaffseed was proposed September 11 for listing as Endangered.

Morefield's Leather Flower (*Clematis morefieldii*)

A perennial climbing vine in the buttercup family (Ranunculaceae), Morefield's leather flower can grow to a length of 16 feet (5 meters). This species is distinguished by its attractive pinkish, urn-shaped flowers. It is known only from a few small sites within rocky limestone woods on the south- and south-



photo by W. H. Duncan

Morefield's leather-flower

west-facing slopes of mountains in Madison County, Alabama.

Morefield's leather flower was first collected in the early 1980's. Since then, three of the eight reported populations have already been destroyed by road building, site clearing, and herbicide use associated with residential development. Only two of the remaining populations are considered to be of significant size. Additional development poses an imminent threat to several sites containing over half of the species' total numbers. For this reason, Morefield's leather flower was proposed October 21 for listing as Endangered.

Louisiana Quillwort (*Isoetes louisianensis*)

A grass-like aquatic herb in the family Isoetaceae, the Louisiana quillwort is closely related to ferns and reproduces by spores. This species occurs in four small streams in the Bogue Chitto River drainage, Washington Parish, Louisiana. Two populations are known, one of which consists of only four individuals.

The slender, quill-like leaves of the Louisiana quillwort arise from a short, fleshy stem that is shallowly rooted in a

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Listing Proposals

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coarse sand or gravel substrate. Activities that affect the hydrology, water quality, or substrate stability of its stream habitat are the main threat to its survival. Such impacts could result from sand and gravel dredging, stream channelization, and erosion from clear-cut logging of adjacent forests, which are occurring within the species' range. Because of these threats, the Service has proposed to list the Louisiana quillwort as an Endangered species (F.R. 10/21/91).

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Regional News

(continued from page 3)

During spring nesting surveys at Wood Buffalo National Park, Canadian biologist Ernie Kuyt found 32 nests and reported that 6 experienced breeding pairs did not nest, apparently in response to the poor habitat conditions. Visiting 20 nests, Canadian and U.S. biologists checked eggs, collecting 16 and leaving at least one viable egg in each nest. This technique ensures a greater hatching success but results in fewer viable eggs for transfer to captivity. By the May 28 pick-up date, predators had destroyed 4 nests.

Of the 16 eggs collected, 6 were infertile or the embryo was dead at the time of pick-up. Of the 10 viable eggs, 6 hatched and 4 survived. Mid-June surveys at the Canadian nest sites indicated that 21 chicks survived, and one nest had 2 eggs yet to hatch. By mid-August, only 9 to 12 chicks survived, a decline characteristic of drought years when food is

scarce and predators find it easy to capture the young, flightless birds.

In the captive whooping crane flocks, one chick survived at the International Crane Foundation in Baraboo, Wisconsin, and two survived at the Patuxent Wildlife Research Center in Laurel, Maryland. Both projects are making efforts to promote natural copulation by young pairs. One of the Patuxent chicks is a product of such mating—a "first" at the Center.

* * *

In the third consecutive year of a whooping crane habitat preservation effort, more than 300 volunteers constructed shoreline erosion protection at Aransas National Wildlife Refuge, Texas. Volunteers placed 11,300 bags of cement at 9 sites to protect 1,875 linear feet (570 meters) of shoreline from natural wave action and boat wakes, especially from barge traffic, in critical marsh habitat.

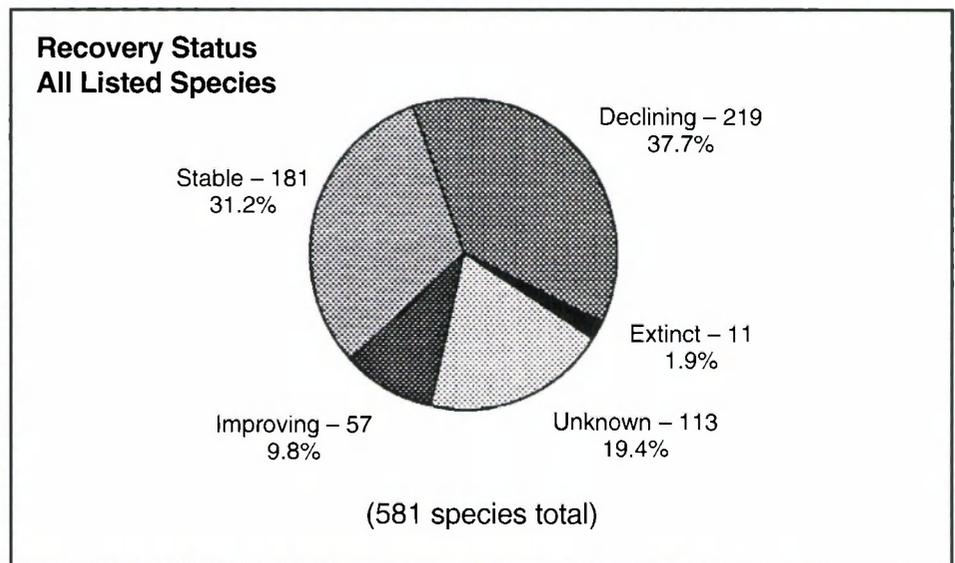
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Status of Recovery Program

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Once a plant or animal is listed, the Service's goal is to reverse the species' decline and neutralize the threats to its survival so that its long-term survival in nature is ensured. The first step is usually to develop a species recovery plan. Of the 581 species covered in the report, 352 have approved recovery plans, and plans are currently being developed for an additional 130 species. For the most part, species that have been on the list less than 3 years do not yet have approved recovery plans. The 40 species that warrant recovery plans but have been listed over 3 years without one (about 7 percent of the species covered in the report) constitute the actual recovery planning backlog. The Service is placing a high priority on developing plans for these species.

Recovery plans are practical, working guidelines that outline specific research and management tasks for species recovery. Although carrying no legal authority, they provide a blueprint for use by a variety of Federal and State agencies, private



organizations, and individuals in undertaking programs to enhance listed species.

The report, the first of its kind, is required under a 1988 amendment to the Endangered Species Act directing the Secretary of the Interior to report to Congress every 2 years on the status of endangered species and recovery plans. This 406-page illustrated document includes a list of approved recovery plans, a list of species occurrences by State, gen-

eral background information, and a synopsis for each species showing its current status and briefly describing past and planned recovery activities.

Copies of the report (stock number 024010-00691-9) are available for \$24.00 from the U.S. Government Printing Office, Superintendent of Documents, Washington, D.C. 20402. Credit card holders can order the report by telephone by calling 202-783-3238.

Fifty-six Species Added to List of Threatened and Endangered Species in August-October 1991

By coincidence, just as 56 species were proposed in August-October 1991 for listing as Threatened or Endangered, final rules listing another 56 — 11 animals and 45 plants — were published in the *Federal Register* by the Fish and Wildlife Service during the same time period. Endangered Species Act protection now applies to the following:

ANIMALS

- razorback sucker (*Xyrauchen texanus*) - a fish occurring in low numbers within parts of the Colorado River basin in Mexico, California, Arizona, Nevada, Utah, New Mexico, Colorado, and Wyoming; listed as Endangered (F.R. 10/23/91).
- Gulf sturgeon (*Acipenser oxyrinchus desotoi*) - a large, anadromous fish that occurs in scattered locations from Louisiana (east of the Mississippi River) to Tampa Bay, Florida; Threatened (F.R. 9/30/91).
- Ouachita rock-pocketbook (*Arkansia (=Arcidens) wheeleri*) - a freshwater mussel that has been reduced in range to segments of two rivers in Arkansas and Oklahoma; Endangered (F.R. 10/23/91).

Two New Mexico Snails - both Endangered (F.R. 9/30/91)

- Alamosa springsnail (*Tryonia alamosae*) and
- Socorro springsnail (*Pyrgulopsis neomexicana*) - both species are small, aquatic snails restricted to several thermal spring systems.

Six Foreign Reptiles - all Endangered (F.R. 9/30/91)

- Maria Island ground lizard (*Cnemidophorus vanzoi*) and
- Maria Island snake (*Liophis ornatus*) - both species once probably occurred on the island of St. Lucia in the Caribbean Ocean, but now are known only from several nearby islets.
- Brazilian sideneck turtle (*Phrynops hoguei*) - known only from two river drainages in southeastern Brazil.

- Cat Island turtle (*Trachemys terrapen*) - known only from Cat Island in the Bahamas.

- Inagua Island turtle (*Trachemys stejnegeri malonei*) - known only from Great Inagua Island in the Bahamas.

- South American red-lined turtle (*Trachemys scripta callirostris*) - also known as the Colombian slider; occurs in Caribbean drainages of northern Colombia and northwestern Venezuela.

PLANTS

- Guthrie's ground-plum (*Astragalus bibullatus*) - a perennial plant in the pea family (Fabaceae); known only from cedar glades of central Tennessee; Endangered (F.R. 9/26/91).

- white irisette (*Sisyrinchium dichotomum*) - a small, white-flowered perennial herb in the iris family (Iridaceae); endemic to piedmont of North Carolina; Endangered (F.R. 9/26/91).

- Texas trailing phlox (*Phlox nivalis* ssp. *texensis*) - a short, clump-forming perennial in the family Polemoniaceae; occurs in eastern Texas; Endangered (F.R. 9/30/91).

- Terlingua Creek cat's-eye (*Cryptantha crassipes*) - a silvery desert perennial in the family Boraginaceae; known only from Brewster County, west Texas; Endangered (F.R. 9/30/91).

- alker's manioc (*Manihot walkerae*) - a perennial herb in the spurge family (Euphorbiaceae); endemic to the Lower Rio Grande Valley of south Texas and northeastern Mexico; Endangered (F.R. 10/2/91).

Hawaiian Plants (all Endangered)

A. Island of O'ahu - The following species are endemic to, or have their largest or best known populations in, the Wai'anae Mountain Range.

- *Cyanea superba* - an unbranched perennial in the bellflower family (Campanulaceae) with a terminal rosette of large leaves and pendent inflorescences of large, white flowers (F.R. 9/11/91).

- *Abutilon sandwicense* - a shrub in the mallow family (Malvaceae) with heart-shaped leaves and greenish flowers. This species and the following 25 O'ahu plants were listed October 29, 1991.

- *Alsinidendron obovatum* - a small shrub in the pink family (Caryophyllaceae).

- *Alsinidendron trinerve* - a related species distinguished by its less compact inflorescence.

- *Centaurium sebaeoides* - known in the Hawaiian language as 'awiwi; an annual herb in the gentian family (Gentianaceae).

- *Chamaesyce celastroides* var. *kaenana* - also known as 'akoko; a woody shrub in the spurge family.

- *Chamaesyce kuwaleana* - a species related to the above variety.

- *Cyanea pinnatifida* - known in Hawaiian as haha; a usually unbranched shrub in the bellflower family with deeply lobed leaves.

- *Diellia falcata* - a member of the fern family (Aspleniaceae).

- *Dubautia herbstobatae* - also known as na'ena'e; a small, spreading shrub in the aster family (Asteraceae).

- *Gouania meyenii* - a shrub belonging to the buckthorn family (Rhamnaceae).

- *Hedyotis degeneri* - a prostrate shrub in the coffee family (Rubiaceae) with four-sided stems and peeling, corky bark.

- *Hedyotis parvula* - a small, highly-branched shrub that can sprawl or grow upright.

- *Hesperomannia arbuscula* - a small, shrubby tree in the aster family.

- *Lipochaeta lobata* var. *leptophylla* - also known as nehe; a low-growing perennial herb in the aster family with lance-shaped leaves.

- *Lipochaeta tenuifolia* - a related plant that can be distinguished by its five-parted disk florets and deeply cut, stalkless leaves.

- *Lobelia niuhauensis* - a low, branched shrub in the bellflower family.

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Determination of Factors Limiting the California Condor

Oliver H. Pattee

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The California condor is a member of the family Cathartidae, or New World vultures. They feed primarily on large carcasses that they locate visually. Historically (after 1800), California condors were reported as year-round residents from British Columbia south to Baja California, but they were rare north of California after 1850. All confirmed nest sites occurred south of San Francisco Bay and north of Baja California; however, historical records suggest California condors once nested as far north as British Columbia and south into Baja California. There were also reported sightings of condors in Utah, Arizona, New Mexico, and Texas.

Although localized concentrations occurred, the California condor has always been a rare bird with a relatively small population. The wild population has

been in apparent decline over the past 150 years. The causes of this decline are numerous and include climatic as well as human-related changes. Human activities, particularly wanton shootings, egg and specimen collecting, poisoning (both intentional and inadvertent), and habitat modifications (including the extirpation of most of the native ungulates), have undoubtedly contributed to the species' decline, upsetting the delicate balance between mortality and natality.

Until the January 14, 1992, release of two young California condors, the species survived only in two captive breeding flocks. The current (as of the release date) population consists of 52 birds, including 9 breeding pairs. From 1987, when the last wild bird was captured, until the end of 1991, 26 young were produced in captivity, including 13 in 1991.

Recovery efforts to establish a new wild population will concentrate in areas used by the remnant populations of the 1980's. However, the California Condor Recovery Plan is being revised to include consideration of additional release sites outside southern California (e.g., Grand Canyon, Pacific Northwest).

Food Resources

Because condors feed primarily on the carcasses of large mammals located in fairly open terrain, domestic cattle are an important food source. Consequently, the survival of any new condor populations may be closely tied to the local cattle industry. Changes in ranch management practices that reduce or eliminate carcasses on open rangeland would

(continued on page 12)

Threatened and Endangered Species

(continued from previous page)

- *Neraudia angulata* - an erect shrub in the nettle family (Urticaceae).
- *Nototrichium humile* - also known as kulu'i; an upright to trailing shrub in the family Amaranthaceae.
- *Phyllostegia mollis* - a densely hairy, non-aromatic, perennial herb in the mint family (Lamiaceae).
- *Sanicula mariversa* - an herb in the parsley family (Apiaceae) with leathery, lobed leaves.
- *Schiedea kaalae* - a perennial in the pink family that grows from a short, woody caudex.
- *Silene perlmanii* - a perennial in the pink family with white flowers and stems that are woody at the base.
- *Tetramolopium filiforme* - a dwarf shrub in the aster family.
- *Tetramolopium lepidotum* ssp. *lepidotum* - a related but larger plant.
- *Urera kaalae* - a shrub or small tree in the nettle family; also known as opuhe.

• *Viola chamissoniana* ssp. *chamissoniana* - also known as pamakani; a shrub in the violet family (Violaceae) with white, purple-tinged flowers.

B. Island of Kaua'i - The first two plants in this section are found along the rugged Na Pali coast, which is characterized by high cliffs and narrow valleys. The other five are endemic to the Wahiawa drainage basin, an area of bogs, streams, ridge summits, and diverse wet montane forests.

- *Hedyotis st.-johnii* - a succulent perennial herb in the coffee family; listed September 30.
- *Schiedea apokremnos* - a low, branching shrub in the pink family; (FR. 9/30/91).
- *Cyanea undulata* - an unbranched shrub in the bellflower family; this species and the following four Wahiawa basin plants were listed on September 20.
- *Dubautia pauciflorula* - a somewhat sprawling to erect shrub in the family Asteraceae.
- *Hesperomannia lydgatei* - a small tree in the family Asteraceae with pendent

flower heads.

• *Labordia lydgatei* - also known as kamakahala; a shrub or small tree in the strychnine family (Loganiaceae).

• *Viola helenae* - a small, erect shrub in the violet family.

C. Island of Lana'i - The following were listed on September 20:

- *Abutilon eremitopetalum* - a shrub in the mallow family (Malvaceae) with densely hairy, heart-shaped leaves.
- *Cyanea macrostegia* ssp. *gibsonii* - a small, unbranched tree in the bellflower family.
- *Gabmia lanaiensis* - a tall, perennial, grass-like plant in the sedge family (Cyperaceae).
- *Phyllostegia glabra* var. *lanaiensis* - a robust perennial herb in the mint family.
- *Tetramolopium remyi* - a shrub in the family Asteraceae.
- *Viola lanaiensis* - a small, erect shrub in the violet family with white, purple-tinged flowers.

California Condor

(continued from page 11)

affect the chances for survival of a released condor population. Such changes could reduce the available food base and necessitate foraging over a wider area or abandoning a portion of the range. Recent interest in reestablishing extirpated native ungulates on parts of the former range (e.g., Bitter Creek National Wildlife Refuge) and encouraging the maintenance of cattle on some public lands could significantly aid the recovery of the California condor.

Habitat

Habitat loss continues to pose a major long-term problem. Because the condor requires large tracts of land in which to find food resources that are few in number but large in biomass, recent land use trends in the California condor's range tend to be detrimental. Conversion of rangelands to agriculture or home sites, gas and oil development, and other activities associated with an industrialized, urbanized human population result in less suitable habitat for the California condor. Condors ranged over 11 million acres (4.5 million hectares) during the 1970's, yet the most recent range encompassed only 6 million acres (2.5 million ha). The long-term outlook for condor habitat is not good.

Contaminants

In addition to habitat loss, direct mortality and environmental contaminants continue to pose a hazard. Three of the last four adult California condor deaths were attributed to lead poisoning. Another condor died of presumed cyanide poisoning and five vanished due to unknown causes. High levels of DDE (a metabolite of the pesticide DDT) found in the shell membrane of an egg laid in 1986 suggest that localized "hot spots" of contamination may still pose hazards. Other contaminants, such as compound 1080 and organophosphate pesticides, represent theoretical hazards of unknown magnitude.

Condor Releases

The reestablishment of a wild population of California condors depends on the continued success of the captive propagation program and the subsequent reintroduction of birds into the wild. Criteria established by the California Condor Recovery Team for release of condors require: three pairs of captive birds to be producing offspring; 96 percent of the genetic material of the founder lines represented by the released birds to be present in the captive population; and a reasonable probability for release in subsequent years following the initial releases. The current captive population met these conditions in 1991.

Considerable progress has been made on strategies to raise and release captive-reared birds. Successful releases of Andean condors in Peru were followed by temporary experimental releases of Andean condors in California, beginning in 1988. Releases of Andean condors in California enabled us to refine the techniques necessary for the reintroduction of California condors. These experimental releases provided information for use in improving release site selection criteria, descriptive information concerning behavioral differences associated with puppet-rearing and parent-rearing protocols, and data to assist in developing release protocols.

During the 4-year experimental project, 13 Andean condors were released in California. The last 4 of these 13 birds were captured before the January 14, 1992, release of two captive-bred California condors (along with 2 new Andean condor companions). Of the other Andean condors released during the experimental program, one died following a collision with a power line, two failed to develop behaviorally—that is, they refused to fly—and were removed for their own safety, two were removed from the wild for health reasons, and the other four were removed to prevent the transfer of unfavorable behavioral patterns to other birds. Inappropriate behavior included begging for food from people, soaring with hang gliders, visiting model

airplane parks, spending considerable periods of time over-flying urban areas (such as downtown Ventura), and inspecting oil well rigs and power lines as possible perching sites. Several people, including climbers, reported that the Andean condors flew over them at close range—as close as 20 meters (65 feet), demonstrating a lack of wariness that could contribute to the shooting problem. Condors are curious and may associate people with interesting activity, developing an acclimation that reduces their fear of humans. Before the next release of California condors, the two young Andean condors recently released in California will be captured for re-release in their native South American habitat.

Future Releases

Contaminants such as lead, predacides, and rodenticides appear to present a continued hazard to future populations of California condors. The current California condor release plan is designed to address these problems but it does not eliminate the hazards. It involves protecting key nesting, roosting, and foraging areas, which would be connected by relatively hazard-free corridors. Extensive supplemental feeding would minimize hazards associated with foraging. If such a feeding program is needed indefinitely, however, the species will never be self-sustaining and truly recovered.

Habitat degradation promises to pose long-term threats to the recovery effort. There is no single agency that evaluates, tracks, and comments on the diverse human activities that affect condor habitat and, subsequently, the recovery effort. Such activities as oil and gas development, power line additions, wind generator farms, off-road vehicle traffic, real estate development, and public use could adversely affect the future suitability of condor habitat. Monitoring and managing these impacts will be critical if the California condor is to survive outside of captivity.

Regional News

(continued from page 9)

Participants included staff from the Fish and Wildlife Service, U. S. Army Corps of Engineers, U.S. Coast Guard, and Texas resource agencies, as well as private citizens, representatives of conservation groups, and private sector businesses such as Conoco and Hollywood Marine.

* * *

Region 3 - In a case that has botanists concerned about disclosing the sites of protected plant species, the Shawnee National Forest in Illinois is offering a \$5,000 reward for information leading to the arrest and conviction of whoever stole the 6 specimens—one entire population—of Mead's milkweed (*Asclepias meadii*) in mid-June.

Calling the theft "exceptionally unusual" in that it involved federally protected plants taken from a remote area, Dr. Chris Topik, National Endangered Plant Program Manager for the U. S. Forest Service, commented, "Nobody dreamed this could happen—finding the Mead's milkweed was no mean task. This event emphasizes the dichotomy between the openness of discourse and the need for data security-protecting information about locations. We are showing and interpreting such species through partnerships and public education. At the same time, we have to be very careful about how we encourage public access to rare plants."

The population consisted of both wild specimens and young, introduced stock recently planted in a joint effort to reestablish Mead's milkweed in its historic range. One of only six places where the Threatened species was known to exist east of the Mississippi River, Shawnee National Forest was considered the premier site for reintroducing the plant into its native habitat.

The Forest Service has one of the largest endangered species conservation programs in the midwest, with involvement of virtually every National Forest. Dr. Larry Stritch, Chief Botanist at Shawnee National Forest, said he does not know why the plants were stolen, but he specu-

lated that it could have been vandalism, "a cheap, easy way to get plants for a private prairie garden," or a possible black market for Mead's milkweed just because the species is rare. Concentrated within a half-acre site, the plants were either carefully dug up or cut off with a razor blade. Monitoring the population weekly, botanists at the National Forest contacted the Fish and Wildlife Service's Division of Law Enforcement in the Twin Cities within 2 hours of discovering that the plants were gone.

Mead's milkweed is a remnant of the tallgrass prairie that was once prevalent in the midwest but has been lost through habitat conversion for urbanization and agriculture. With its latest loss, the plant is now restricted to 80 populations in 23 counties in Kansas, Missouri, Iowa, and Illinois. The small number of plants at each site and the species' poor reproductive success threaten its continued existence.

Mead's milkweed is one of 28 Endangered and Threatened plants and animals in the upper midwest targeted for recovery by the year 2000. The recovery initiative is a cooperative effort involving Federal and State agencies and private landowners, including the Forest Service, the Fish and Wildlife Service, the Morton Arboretum in Lisle, Illinois, and the Illinois Department of Conservation.

A perennial plant that grows as a solitary stalk up to 16 inches (40 centimeters) tall, the Mead's milkweed has broadly ovate opposite leaves with a whitish, waxy covering, topped by a cluster of greenish to cream-colored flowers. Anyone who has information about the theft should call Jim Schull, the Special Agent conducting the investigation, at Shawnee National Forest (618-253-7114).

* * *

Region 4 - During a July survey, divers from the Fish and Wildlife Service's Jackson, Mississippi, Field Office discovered several specimens of the inflated heelsplitter (*Potamilus inflatus*) in the main stem of the Black Warrior River in Alabama, only the third discovery of this Threatened freshwater mussel in the river since the mid-1970's. The number of

heelsplitters found—20 live and 15 dead—is encouraging, since only three had ever been collected in the area. Of the live mollusks, nearly all were juveniles, indicating that the species has a good local population.

Continuing the survey, divers confirmed a range extension for the heelsplitters about 25 miles (40 kilometers) downstream of Selden Dam when they found three more—two fresh dead and one live.

Until the 1991 discoveries, Service biologists had collected two shells of inflated heelsplitters in 1989 in the Black Warrior bendway downstream of Selden Dam and a single shell in the mid-1970's from the main stem just below the bendway. In 1980, a graduate student may have collected a specimen and misidentified it as *Leptodea laevissima*. During the most recent survey, biologists generally found the species in slow current areas with soft substrate at water depths of up to 40 feet (12 m).

Listed in 1990, the inflated heelsplitter is also known to occur in the Amite River in Louisiana and in the Tombigbee River in Alabama. Although the mussel once inhabited parts of seven rivers in Alabama, Louisiana, and Mississippi, extensive habitat alteration has eliminated the species from most of its historical range. Sand and gravel mining, along with channel maintenance, are the primary threats. The heelsplitter's best populations occur in the Amite River.

* * *

The Jackson Field Office is working with major timberland owners in the South to develop habitat conservation plans to benefit federally listed species, an important initiative in view of the fact that 91 percent of timberland in the area is privately owned. These forests are home to a variety of rare wildlife including the red-cockaded woodpecker (*Picoides borealis*), Red Hills salamander (*Phaeognathus hubrichti*), and gopher tortoise (*Gopherus polyphemus*). Such habitat conservation plans are designed to benefit endangered species as well as meet the needs of timberland owners.

(continued on page 14)

Regional News

(continued from page 13)

As a first step in developing silvicultural strategies to promote the conservation of the Red Hills salamander and the harvest and regeneration of timber, the International Paper Company is funding an assessment of population densities for this monotypic species in various timber types and slopes.

The Scott Paper Company is discussing a similar project, and Georgia Pacific's habitat conservation plans for the gopher tortoise and the red-cockaded woodpecker are almost ready for consideration of an incidental take permit. Georgia Pacific and Cavenham Companies, as well as the State of Mississippi, also are discussing habitat conservation plans for property occupied by gopher tortoises. Under the habitat conservation plan process, the Fish and Wildlife Service negotiates with major timberland owners who, once the plans are formulated and approved, have responsibility for implementing the timber management practices.

* * *

Region 5 - Fortunately, the roseate tern (*Sterna dougalii dougalii*) breeding season in New England ended in early August this year, avoiding the impact of Hurricane Bob. Altogether, 3,611 pairs nested at 18 colonies in 4 States. As in previous years, the roseate's reproductive success was good at the protected large colonies and poor or lacking at the smaller colonies. In general, roseate terns are maintaining their population levels, with the majority of the population in two or three large colonies. Massachusetts had 1,778 nesting pairs in 5 colonies, New York followed with 1,522 pairs in 6 colonies, Connecticut had 185 pairs in one colony, and Maine had 128 pairs in 6 colonies. Rhode Island had no nesting roseate terns this year.

* * *

Biologists who took a census of 9 summer colonies of Virginia big-eared bats (*Plecotus townsendii virginianus*) in West Virginia caves tallied 4,455 bats, a 15 percent increase from the 1990 count and a 20 percent increase from 1984, the

first year all known colonies were surveyed. All the colonies are now protected by gates, fences, or landowner agreements.

* * *

Radio-tracking of 4 Virginia big-eared bats in Pendleton County, West Virginia, for 2 weeks in May resulted in good information about their habits, including territorial foraging behavior. Bats foraged over both fields and woods. While telemetered bats foraged in various areas, individuals foraged in the same areas night after night, routinely traveling 3 to 5 miles from the cave to the chosen sites. For several consecutive nights, biologists followed a single bat from the time it left the cave in the evening until it returned the next morning. Although some of the 10 bats involved in the project lost their transmitters early in the tracking period, researchers recovered the transmitters and placed them on different bats.

* * *

Biologists conducting freshwater mussel surveys at 21 sites on the Elk River in West Virginia during July and August located 1 of their 2 targeted species. *Pleurobema clava*, a Federal listing candidate, was found at 6 of 10 historic sites and at 3 new locations. The other candidate, *Epioblasma torulosa rangiana*, was not found at any site. Altogether, biologists identified 23 mussel species during the surveys.

* * *

Researchers live-trapped, ear-tagged, and released eastern woodrats (*Neotoma floridana magister*) at 12 sites in West Virginia between June and September, collecting population data on this Federal listing candidate. In addition, 30 of the animals were supplied to the New York Department of Environmental Conservation in an effort to reestablish a population at one of the species' historic locations.

* * *

Representatives from several Service offices created and staffed an "Extinction is Forever" exhibit at the New York State Fair, which attracts about 900,000 people each year. Focusing on endangered species, the display featured a living stream

provided by the Service's Leetown, West Virginia, facility complete with Atlantic salmon (*Salmo salar*) from Tunison Lab. Other Service staff members from the New York Field Office and Montezuma National Wildlife Refuge also attended.

* * *

In what is believed to be the first successful nesting of peregrine falcons (*Falco peregrinus*) on Lake George in at least 25 years, the New York State Department of Environmental Conservation (NYSDEC) reported that 2 eyries each fledged 2 young. The total number of young peregrines hatched in the State during 1991 was 29, including 14 young from 8 pairs in the Adirondack Mountains and 15 young from 10 pairs in the New York City area. Three of the New York City fledglings are known to have died.

* * *

The NYSDEC also reported 16 territorial bald eagle (*Haliaeetus leucocephalus*) pairs in the State during the 1991 season, an increase from 14 pairs in 1990. Eleven pairs produced 18 eagles, although 2 of the young died before fledging.

* * *

Region 6 - Because of the success of a 5-year captive-breeding program for black-footed ferrets (*Mustela nigripes*), the Fish and Wildlife Service and the Wyoming Game and Fish Department released 49 of the Endangered animals on the native grasslands of Shirley Basin, Wyoming, during September and October to begin establishing the first experimental population for the species. This event generated national news and focused favorable attention on the agencies. The first two ferrets freed from their cage after an acclimation period on the prairies scampered 3 miles and 5 miles before finding homes in a prairie dog town. Volunteers and State and Federal biologists have been monitoring the ferrets, which were outfitted with radio collars.

Some of the captive-bred ferrets have been confirmed as taking prairie dogs, indicating that they were adapting to the wild; others were not. As of January

(continued on next page)

Regional News

(continued from previous page)

1992, 6 ferrets are known dead—all as a result of predation by coyotes and badgers.

State and Federal biologists utilized excellent snow tracking conditions in November to estimate that about 10 animals have survived in the wild, although a few others could exist undetected because of the expanse of the range. After determining that most of the batteries on radio transmitters had been expended, biologists removed the telemetry collars from the remaining ferrets. The scientists will depend on snow-tracking and use lighting at night, when the animals are most active, to monitor the population through the winter months.

The agencies will analyze information from the release to prepare and refine a strategy for the fall. During the next 10 years, scientists will continue to identify sites in Wyoming and other western States suitable for releasing additional young produced by captive-breeding populations which, as of January 1992, total about 300 animals.

* * *

The Denver Regional Director has approved a new recovery plan for the Colorado squawfish (*Ptychocheilus lucius*). This revision of the original 1978 plan incorporates new information on the status of the species, including its distribution and biological requirements. Two public reviews of the plan were completed after biologists found squawfish in the San Juan River and focused attention on the importance of this river to the species' recovery.

* * *

Fish and Wildlife Service biologists are developing an Interim Gray Wolf (*Canis lupus*) Program for North Dakota, recognizing that expanding populations of wolves from Minnesota and Canada are dispersing the animals into the State. In North Dakota, the gray wolf is listed as Endangered.

In 1990, an aerial hunter shot what he thought was a coyote (*Canis latrans*) near Ashley, North Dakota, in the southeastern part of the State. A year later, a

rancher near Stanley, in northwestern North Dakota, also shot what he thought was a large coyote. Both animals were wolves; the first, probably from Minnesota, and the second, probably from Canada.

In addition to these shootings, unconfirmed wolf sightings have been increasing steadily, particularly in the north-central part of the State, where a large block of forest habitat supports a healthy deer population, and in the southeast corner of the State, which is characterized by rolling prairie and contains the Sheyenne National Grasslands.

The objectives of the program are to provide guidance to government personnel, protect non-problem wolves, develop a mechanism for removing problem wolves, monitor the species' population, predict its trend in North Dakota, and implement a public awareness strategy.

* * *

The Service has hired a private contractor to collect data on the status of eight species of butterflies in North Dakota and South Dakota that are suspected of declining because of habitat fragmentation and degradation. They are the powesheik skipper (*Oarisma powesheik*), arogo skipper (*Atrytone arogos*), mulberry wing (*Poanes massasoit*), broad-winged skipper (*Poanes viator*), Dakota skipper (*Hesperia dacotae*), dion skipper (*Euphyes dion*), tawny crescent (*Phyciodes batesii*), and regal fritillary (*Speyeria idalia*).

The powesheik skipper, arogo skipper, Dakota skipper, and regal fritillary appear to require virgin mesic prairie. Most of their remaining habitat consists of small tracts of private land. The mulberry wing, broad-winged skipper, and dion skipper inhabit sedge marshes with shallow water. Oxbows provide the typical habitat in North Dakota. The tawny crescent inhabits open areas near woodlands.

All species except the regal fritillary appear to have senescent, stagnant distributions that are remnants of their former range. The remaining habitat is sensitive to the effects of land management, such as grazing and pesticides that eliminate nectar sources. Public land in southeastern North Dakota that supported high

densities of several of the species in the early 1980's now appears to be devoid of the butterflies.

* * *

History on the Wing

(continued from page 1)

hatched at the San Diego Wild Animal Park, flew to freedom from a holding pen in the Los Padres National Forest's Sespe Condor Sanctuary, about 75 miles northeast of Los Angeles.

Occurring 5 years after the last California condor was removed from the wild in an unprecedented effort to save the species from extinction, the release of the vultures marked the second success in a 10-year effort to reintroduce the birds into their historic range. The first success was breeding the condors in captivity, a challenge never undertaken before.

To learn about California condor habits, the Fish and Wildlife Service conducted a 4-year experimental project, releasing captive-produced Andean condor (*Vultur gryphus*) chicks into California skies. The goal of the Andean condor project was to develop release techniques for the related California condor by monitoring the daily movements and feeding behavior of the Andean species as a surrogate. All 13 of the Andean condors released as part of the experiment have been recaptured.

For three months, Xewe and Chocuyens and two Andean condor chicks were in a condor "halfway house," a large enclosure nestled into the side of a 150-foot (46-meter) cliff. This temporary residence featured a 30-foot by 30-foot (9 m by 9 m) patio with soft netting where they took short flights and practiced "hop-flaps," straight up-and-down take-offs and landings. The birds got a feel for the winds and acclimated themselves to their natural surroundings. The removal of the net completed the acclimation process. The Andean condors accompanying Xewe and Chocuyens helped create a group typical of wild populations. The South American birds will be recaptured before the next release of California condors.

(continued on page 16)

History on the Wing

(continued from page 15)

When they are fully mature, Xewe and Chocuyens will weigh 20 pounds (9 kilograms) and have 10-foot (3-m) wingspans as representatives of North America's largest species of soaring birds.

The 50 California condors in the captive-breeding flocks live at the Los Angeles Zoo and the San Diego Wild Animal Park. These zoos are partners with the Fish and Wildlife Service in the recovery effort, along with the U.S. Forest Service and the California Department of Fish and Game. Biologists hope to release additional birds each year in the goal of re-establishing a viable wild population.

In prehistoric times, California condors ranged throughout the coastal regions of North America, from British Columbia to Baja California, east to Florida and north to New York. By 1967, however, they were reduced in range to a small region of California and were listed as Endangered. The Fish and Wildlife Service adopted a recovery plan in 1975. In 1980, the Service and the National Audubon Society established the Condor Research Center in Ventura, California, to coordinate field investigations in the condor's last remaining habitat in Kern and Ventura Counties.

By 1987, the loss of habitat, lead poisoning from ingesting bullet fragments from deer carrion, and illegal shooting had reduced the number of wild condors to 27. Biologists captured the remaining

Category	ENDANGERED		THREATENED		LISTED SPECIES TOTAL	SPECIES WITH PLANS
	U.S.	Foreign Only	U.S.	Foreign Only		
Mammals	56	249	9	22	336	33
Birds	73	153	12	0	238	69
Reptiles	16	64	18	14	112	27
Amphibians	6	8	5	0	19	7
Fishes	55	11	34	0	100	51
Snails	7	1	6	0	14	7
Clams	40	2	2	0	44	33
Crustaceans	8	0	2	0	10	5
Insects	13	1	9	0	23	13
Arachnids	3	0	0	0	3	0
Plants	243	1	64	2	310	137
TOTAL	520	490	161	38	1209*	382**
Total U.S. Endangered	520		(277 animals, 243 plants)			
Total U.S. Threatened	161		(97 animals, 64 plants)			
Total U.S. Listed	681		(374 animals, 307 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 311 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

January 31, 1992

birds and began breeding them in captivity. The reintroduction effort follows similar successes involving bald eagles and

peregrine falcons and provides continuing evidence of the conservation benefits of the Endangered Species Act.

September/December 1991

Vol. XVI Nos. 9-12

ENDANGERED SPECIES

Technical Bulletin

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

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