October 1985 Vol. X No. 10

ENDANGERED SPECIES

Technical Bulletin

Department of Interior. U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240

New Notice Identifies Vertebrate Listing Candidates

In the September 18, 1985, *Federal Register,* the Fish and Wildlife Service (FWS) issued a "Review of Vertebrate Wildlife," replacing and updating an earlier version that appeared in 1982. The main purpose of the new notice is to identify those native U.S. vertebrate taxa—fish, amphibians, reptiles, birds, and mammals—that are considered candidates for possible addition to the Federal List of Endangered and Threatened Wildlife, and to request comments and information that may assist in determining whether or not to actually propose such addition.

The identified animals are placed in one of three categories that reflect their biological status:

Category 1 comprises taxa for which the FWS currently has substantial information on hand to support the biological appropriateness of proposing to list as Endangered or Threatened.

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Photo by Don Bleitz

*The golden-cheeked warbler (*Dendroica chrysoparia*) is one of the 515 vertebrate taxa identified as candidates for future listing.*

Protection Recommended for Three Plants

The Fish and Wildlife Service (FWS) proposed during September to list three plants as Endangered. All are restricted in range, and are thought to be vulnerable to extinction from habitat loss and other factors. If the listing propoals are made final, Endangered Species Act protection will be extended to the following plants:

Eriogonum ovalifolium var. *williamsiae*

Otherwise known as the Steamboat buckwheat, *Eriogonum ovalifolium* var. *williamsiae* is known only from the vicinity of Steamboat Hot Springs in Washoe County, Nevada. It grows there on a loose, gravelly, sandy-clay soil derived from a terrace of hot spring deposits. Although the plant is locally common, with a total population of 10,000-15,000 individuals, it is concentrated in several colonies on less than 100 acres (40.5 ha) of land.

The plant is a low growing perennial with small, oval, greenish-white leaves that are densely arranged in tight rosettes. It frequently forms large mats. The small flowers are white, often with a pink midrib on each sepal, and are clustered at the ends of erect stems.

The plant has been collected only from around Steamboat Hot Springs, but it is thought to have been more widespread in the past. Development activities in the area probably contributed to its decline. Due to its restricted range, the buckwheat is vulnerable to possible extinction from further habitat degradation.

Roads have been constructed through most of the Steamboat buckwheat colonies, and off-road vehicle (ORV) travel has further disturbed the habitat and directly destroyed plants. The BLM gave some protection to a portion of the habitat by designating the main terrace, with its active geothermal characteristics, as an Area of Critical Environmental Concern. Although the BLM fenced the area on three sides and posted it as closed to motor vehicles, ORVs still enter through the unfenced side. The Steamboat buckwheat, having adopted to its unusual habitat, is sensitive to variations in moisture, including the kinds of changes that can result from the ORV use and from the refuse that has been dumped at some of the colonies. There also is the potential threat that drilling of geothermal test wells may alter the habitat's water regimes. Further causes for concern are development of a park on BLM land that is leased to the Washoe County Parks and Recreation Department, the planned commercial development on private land adjacent to one of the buckwheat colonies, and the possibility of mining in the immediate area.

In light of these problems, the Steamboat buckwheat was proposed for listing as an Endangered species (F.R. 9/12/85). Since its habitat is so restricted and accessible, the FWS decided that pinpointing the colonies with a Critical

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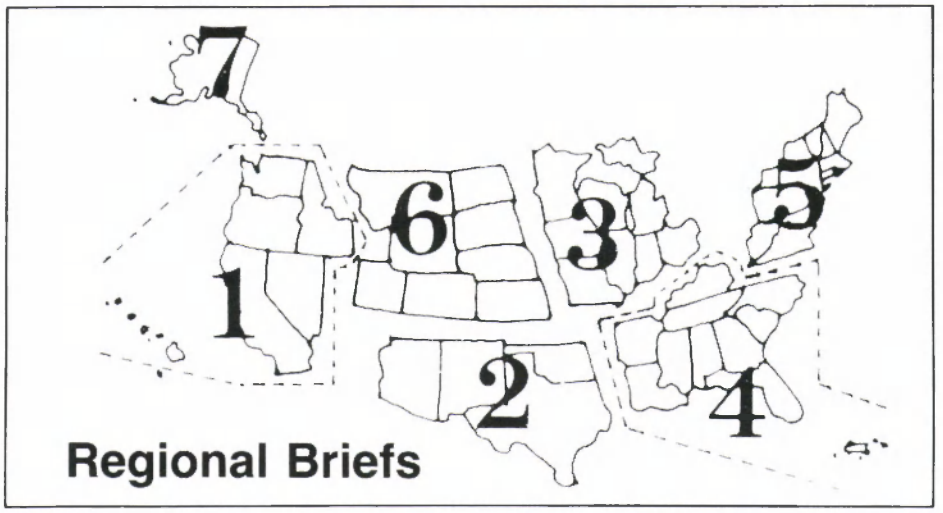

Endangered Species Program regional staffers have reported the following activities for the month of September:

Region 1—The Sacramento Endangered Species Office (SESO) staff recently conducted an on-site investigation of a ditch proposed by the Masin-Sonoma Mosquito Abatement District (MAD) to improve drainage and eliminate a potential mosquito breeding source in a tidal marsh at Mill Valley. Coincidentally, the proposed ditch would have dissected one of only two known populations of Point Reyes bird's-beak *(Cordylanthus maritimus* ssp. *palustris)* in the San Francisco Bay area, a Category 2 listing candidate. However, the MAD agreed to reroute the ditch to avoid the population and to preclude public access, which under current conditions was resulting in significant trampling of the plant.

* * *

The SESO staff, in cooperation with the U.S. Forest Service and California Department of Fish and Game (CDFG), participated in a site investigation of the Silver King Creek watershed in Alpine County, California. The purpose of the trip was to develop a grazing plan with the grazing permittee that is compatible with recovery plan objectives for the Threatened Paiute cutthroat trout *(Salmo clarki seleniris)*. (See related story in BULLETIN Vol. X No. 7.) A plan was developed that will remove cattle use from one tributuary, defer the season of use in all other Paiute cutthroat trout habitats, reduce grazing intensity, and fence off all degraded riparian corridors. There was a consensus within the group that recovery plan objectives for fish numbers and habitat quality in the Silver King watershed will be met if the recommended plan is implemented.

* * *

The status of the Endangered San Clemente loggerhead shrike *(Lanius ludovicianus mearnsi)* has remained relatively stable since 1984. There have been 18 breeding attempts by 14 pairs, and 18 young fledged. Seven of the 18 breeding attempts failed, and, in six of these cases, predation is suspected. At least 2 breeding adults and over 20 young were lost to predators, which include cats and ravens.

The shrike population continues to be limited by predation and a lack of suitable nesting habitat. Feral goats have removed all suitable nesting habitat from about 50 percent of San Clemente Island and continue to degrade the remaining shrike nesting locations.

* * *

The SESO staff completed a survey of two plant species, *Phacelia ramiosissima* and *Cuscuta californica*, at the Los Angeles International Airport's El Segundo Dunes area. A report on the distribution of these plants on the dunes is being drafted. *P. ramiosissima* is the larval host plant for Henne's Eucosma moth *(Eucosma hennei)*, and *C. californica* is the larval host plant for Lora Aborn's moth *(Lorita abornana)*, two

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Seven Species Receive Protection

During September, three plants and four fishes were given final protection under the Endangered Species Act. These species, listed as Endangered or Threatened, are as follows:

Maguire Daisy (*Erigeron maguirei* var. *maguirei*)

The Maguire daisy is a small perennial that grows up to 5 inches (12.7 centimeters) tall and has leafy, hairy, stems. In mid-June, white to pinkish ray flowers surrounding a yellow center of disc flowers appear. Only five individual plants are currently known to exist, making the Maguire daisy one of the rarest taxa in the United States.

First discovered in 1940, the Maguire daisy appears to be extirpated at two of its three historically known sites. The few remaining plants occur only at the upper end of a sandstone canyon in Emery County, Utah, on land administered by the Bureau of Land Management (BLM). There are mineral claims for uranium, and oil and gas leases in this area, and surface disturbance associated with exploration or assessment of these claims and leases could easily cause the Maguire daisy to become extinct. Recreational motorcycle use of the nearby canyon bottom may also threaten the species' survival, as could grazing, although the daisy's current site appears to be less accessible to cattle than other areas where it was found previously.

On July 27, 1984, the FWS proposed to list the Maguire daisy as Endangered because of the severe threats to its existence (see story in BULLETIN Vol. IX No. 8). After a thorough evaluation of all available information, and after considering the species' extreme vulnerability due to the very low number of remaining plants, a decision was made on September 5, 1985, to list the species as Endangered.

Short's Goldenrod (*Solidago shortii*)

This member of the aster family, endemic to the State of Kentucky, grows to slightly less than 39 inches (one meter) tall and bears yellow flowers between mid-August and early November. It is found in cedar glades and openings in oak or hickory forests, in pastures, and along roadsides. Only five populations of *Solidago shortii* are now known to exist, all in portions of Robertson, Nicholas, and Fleming Counties. The largest of these populations, located within Blue Licks Battlefield State Park, occurs within a 1.5-acre area that has been dedicated as a nature preserve by the Kentucky Nature Preserves Commission. The remaining four sites are located on private property.

All five populations of Short's goldenrod (approximately 2,300 individual plants) are being threatened by natural and human-induced habitat alterations, along with potential recreational activities. In light of the species' declining numbers, these threats prompted the FWS to propose listing *S. shortii* as Endangered on October 11, 1984 (see BULLETIN Vol. IX No. 11) and subsequently to approve the final rule (F.R. 9/5/85).

San Mateo Thornmint (*Acanthomintha obovata* ssp. *duttonii*)

The San Mateo thornmint is an annual herb of the mint family. It grows to about 4 to 7 inches (10 to 18 cm) in height and bears upright inflorescenses with creamy white flowers that have a rose to purplish pigment in their lower notched lip. Only one small population of this species is known to survive, and is located at Edgewood County Park near Redwood City, California, in San Mateo County. This population of approximately 1,000 to 2,000 individuals grows on a grassy slope on soils derived from serpentine rock.

Historically, the San Mateo thornmint was found at scattered locations in San Mateo County, but most of these sites have been destroyed, presumably by urban development, road construction, and similar land uses. The single known remaining colony has been severely damaged by off-road vehicles (ORVs).

Although the existing plants still face threats from ORV use, damage has decreased since the site came under county ownership. Nevertheless, a proposed recreation plan is now being considered for Edgewood Park involving construction of an 18-hole golf course and facilities for day camps, picnic areas, and expanded hiking and equestrian trails. All of these proposed activities have the potential to further damage the last population of the thornmint, or even to cause its extinction.

On June 18, 1984, the FWS proposed to list the San Mateo thornmint as Endangered (see BULLETIN Vol. IX No. 7). The final rule protecting this imperiled species was published in the September 18, 1985, *Federal Register*.

Three White River Fishes

Three desert fishes that occur in remnant waters of the pluvial White River system in eastern Nevada have been listed as Endangered. Populations of all three are declining as a result of habitat destruction and the introduction of exotic fishes. Proposed by the FWS as Endangered in May 1984 (see BULLETIN Vol. IX No. 6), the following three fishes will now receive final protection:

The **White River spinedace** ***(Lepidomeda albivallis)*** is one of six species belonging to a unique tribe of fishes that are noted for their adaptations to small, swiftwater desert streams. It is a relatively large species of *Lepidomeda*, often attaining a length of 4 to 5 inches (10 to 13 cm), and can be distinguished from other members of its genus by various physical characteristics, including distinctive body coloration.

In 1960, *L. albivallis* was present in large numbers throughout its range, but by 1979 it was considered rare. Five populations of this species have already been eliminated and the remaining two, found in the Lund and Flag Springs systems, have been altered by channelization and diversion structures, which were developed to make water available for residential and agricultural uses. Further channelization and diversion of the water supply could pose a continuing threat to the White River spinedace. Competition and predation from exotic species, such as guppies (*Poecilia reticulata*), mosquito fish (*Gambusia affinis*), and goldfish (*Carassius auratus*), also are serious problems for the native spinedace.

As part of the September 12, 1985, final rule, Critical Habitat was designated for the White River spinedace to include three sites in Nevada: Preston Big Spring and Lund Spring (both located in White Pine County) and Flag Springs (Nye County). Although outside the species current range, Preston Big Spring is included in the Critical Habitat designation because it is part of the spinedace's historical range and is considered essential for the species' recovery.

The **White River springfish** ***(Crenichthys baileyi baileyi)*** and **Hiko White River springfish** ***(C. b. grandis)*** are found in the Pahranagat Valley of Lincoln County, Nevada. The White River springfish is currently known to occur only in Ash Springs, and the Hiko White River springfish, extirpated from Hiko Springs, now exists as a single, small population of fewer than 100 in Crystal Springs.

Habitats occupied by these two subspecies have been extensively altered for irrigation and public recreation. These activities have changed the character of the aquatic environments by eliminating vegetation, diverting the entire flow of some streams into pipes or cement canals, and manipulating water within stream channels to facilitate irri-

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Seven Species

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gation. Not only do these alterations reduce habitat for the two fishes, they lead to declines in populations of invertebrates that the fish use for food. The introduction of exotic species into the Pahranagat Valley during the past 50 years has also contributed to reduced populations of the spring fishes through predation and competition for food and space.

The September 27, 1985, rule listing these two fishes as Endangered included a designation of Critical Habitat for each. Critical Habitat for the White River springfish includes Ash Springs and its associated outflow in Pahranagat Valley. For the Hiko White River springfish, it includes Crystal and Hiko Springs and their associated open outflows, also in Pahranagat Valley. These designated areas satisfy all known criteria for both subspecies' ecological, behavioral, and physiological requirements.

Approximately 0.1 acre of the designated Critical Habitat for the White River springfish is located on land administered by the BLM, which will be preparing a Habitat Management Plan and Recreational Management Plan for the area. These management plans are expected to be compatible with the Critical Habitat designation.

Warner Sucker *(Catostomus warnerensis)*

The Warner sucker, endemic to the streams and lakes of the Warner Basin in south-central Oregon, reaches a maximum length of about 20 inches (51 cm). It is part of a relict fauna isolated in waters remaining from a large Pleistocene lake that previously covered much of the basin floor. Historically, the Warner sucker was very abundant, but now it is known to occur only in portions of Crump and Hart Lakes, the spillway canal north of Hart Lake, and portions of a few nearby creeks. Because of this species' decline, the FWS proposed to list the Warner sucker as Threatened on May 21, 1984 (see BULLETIN Vol. IX No. 6).

The conversion of stream flows into lakes by water diversion structures has significantly changed the Warner sucker's habitat, and prevents the stream-spawning sucker from reaching its spawning and rearing areas. In addition, channelization of streams and overgrazing have disturbed soils in the watershed and degraded streams even further through siltation of the gravel beds needed by the fish for spawning. The introduction of exotic fishes into the Warner Valley lakes has also contributed to the decline of *C. warnerensis.*

Critical Habitat for the Warner sucker has been designated for portions of the following streams in Lake County, Oregon: Twelvemile Creek, Twentymile Creek, Snyder Creek, Honey Creek, and parts of the spillway canal north of Hart Lake. A 50-foot riparian zone on each side of the streams was included to protect the quality of the stream ecosystem, and it is considered essential to the conservation of this species. Complete Critical Habitat descriptions and maps are included in the September 27, 1985, final listing rule.

Some of the area designated as Critical Habitat for the Warner sucker is under the jurisdiction of the BLM and the U.S. Forest Service. Development of habitat or forest management plans involving these two Federal agencies could require consultation with the FWS if their implementation may affect the species' survival.

* * *

Available Conservation Measures

As Endangered or Threatened species, each of these plants and fishes will receive the protection authorized by the Endangered Species Act. Among the conservation measures provided to listed species are the increased recognition of their precarious status, the requirement for the FWS to develop and implement recovery plans, the possibility of Federal aid to State conservation programs, and prohibitions against certain practices.

The prohibitions, in part, make it illegal to engage in interstate or international trafficking in listed species without a permit. For the Endangered fishes, prohibitions against take without a permit are now in effect. In the case of the Warner sucker, which is listed as Threatened, the listing includes a special rule that allows for take of Threatened species as necessary and advisable for their conservation. Such taking of this species is allowed without a Federal permit *if* a State collection permit is obtained and all State wildlife regulations are satisfied. However, taking will be allowed only for scientific, propagation, educational, or other purposes consistent with the Endangered Species Act. Incidental catch of the Warner sucker by licensed anglers will not be subject to prosecution, as long as the fish are immediately returned to the water.

Under the Act, the rules for take of listed plants are different. It is unlawful to remove Endangered plants from only those lands that are under Federal jurisdiction. This protection, authorized by Section 9 of the Act, will extend to the Maguire daisy, since the site of its single remaining population is under BLM jurisdiction.

Section 7 of the Act requires Federal agencies to consult with the FWS to ensure that any actions they fund, authorize, or carry out will not jeopardize the survival of any listed animals or plants, or adversely modify their Critical Habitats. These Section 7 requirements apply even when Critical Habitat has not been designated.

Comment Period Reopened on Bay Checkerspot

The Fish and Wildlife Service (FWS) has published a notice (F.R. 9/13/85) reopening the public comment period on the pending proposal to list the bay checkerspot butterfly *(Euphydryas editha bayensis)* as Endangered and to designate its Critical Habitat. Additional comments and information regarding the status of this butterfly can be submitted to the Regional Director, Region 1 (address on BULLETIN page 2), until November 12, 1985. The new deadline for a final decision on the proposal is March 11, 1986.

The bay checkerspot has been reduced both in population size and geographical range. Of 16 colonies formerly known, 11 have recently become extirpated. Colonies were eliminated as a result of freeway construction, subdivision construction, the introduction of exotic plants, and livestock overgrazing coupled with drought. On September 11, 1984, the FWS proposed giving the butterfly and its habitat protection under the Endangered Species Act (story in BULLETIN Vol. IX No. 10.)

The original 60-day public comment period has now been extended or reopened for the fourth time to allow for the submission of additional information and comments. Indications of substantial scientific disagreement about the status of the bay checkerspot and the threats it faces prompted the latest extension, which is authorized under Section 4(b)(6)(B)(i) of the Act. Before the new March 11, 1986, deadline for a decision on listing, a panel of FWS scientists will review all available data and furnish recommendations on whether or not to proceed with the proposed action.

Three Plants

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Habitat designation could make the buckwheat more vulnerable to vandalism and overcollecting. The habitat nevertheless would receive protection from adverse Federal activities under Section 7 of the Endangered Species Act. Currently, the only known Federal activity that may affect the species is the proposed recreational development on land leased from BLM. Development of such a recreation area would more likely include measures for protection of the buckwheat if the plant is listed. The BLM has already expressed a willingness to work with the public and the private landowner to develop conservation and management programs. Such programs might include the development of a cooperative agreement with the landowner or, possibly, a land exchange.

Comments on the listing proposal are welcome, and should be sent to the Regional Director, Region 1 (address on page 2), by November 12, 1985.

Cypressus abramsiana

Only five small populations of this tree, commonly known as the Santa Cruz cypress, are known to exist. Portions of each have been destroyed or are threatened by residential development, land clearing for agriculture, logging, and/or alteration of the natural fire cycles upon which the species depends. One of the populations also faces threats from oil and gas drilling. Accordingly, the FWS proposed listing *Cypressus abramsiana* as Endangered (F.R. 9/12/85).

C. abramsiana is an erect, coniferous tree that reaches approximately 34 feet (10 meters) in height and has a compact, symmetrical, pyramidal crown. The five known populations are found within a two-county area of the Santa Cruz Mountains. Four of the groves are in Santa Cruz County; the fifth is at Butano Ridge in San Mateo County, a portion of which is included in Pescadero Creek County Park. Except for the parkland, all of the sites are privately owned, and are subject to the threats mentioned earlier. For example, more than half of the habitat at the largest grove (at Bonny Doon, Santa Cruz County) could be lost to a proposed vineyard development.

Fire has an important role in the Santa Cruz cypress life-cycle. Areas where the cypress grows historically were subject to periodic wildfires, and the species depends on these fires occurring at natural intervals. Cypress trees are "obligate seeders"; that is, they do not resprout from stumps after a fire, and thus depend completely on seeds for post-fire regeneration. If fire breaks out at too short an interval, the new trees may not yet be at seed-bearing age and the groves could be extirpated. Conversely, the absence of fire for too long a time apparently results in lowered reproductive capability and, therefore, a more vulnerable population.

The proposal to list the Santa Cruz cypress as an Endangered species did not identify Critical Habitat, since such a designation would publicize the exact locations of the groves and make them more vulnerable to vandalism. (The largest tree in the Bonny Doon population was cut down recently.) Even without a formal Critical Habitat designation, however, the Section 7 protection against jeopardy to listed species from Federal activities still applies. In the case of the Santa Cruz cypress, the only Federal action that could affect the species involves oil and gas production at Butano Ridge, since issuance of leases and approval of drilling are the responsibility of the BLM. If the cypress becomes listed and is likely to be affected by drilling, the BLM would be required to consult with the FWS on ways to avoid jeopardy.

Comments on the listing proposal are welcome, and should be sent to the Regional Director, Region 1 (address on page 2), by November 12, 1985.

Glaucocarpum suffrutescens

A member of the mustard family, *Glaucocarpum suffrutescens* (toad-flax cress) is the only species in its genus. It is endemic to shale barrens in the Uinta Basin of northeastern Utah, in or adjacent to the Hill Creek drainage in southern Uintah County and at the base of the Badland Cliffs in nearby Duchesne County. The eight known populations total fewer than 1,900 individuals, and are in decline because of widespread habitat degradation. On September 5, 1985, the species was proposed for listing as Endangered.

G. suffrutescens survives with several other endemic plants on scattered knolls and benches of a calcareous shale that is strongly resistant to erosion. The sites resemble small, extremely dry desert islands surrounded by sagebrush or pinyon-juniper woodlands.

Most of the plants are on property administered by the Bureau of Land Management (BLM). Part of the largest *G. suffrutescens* population is on the Department of Energy's Naval Oil Shale Reserve No. II, where BLM is responsible for surface management; the remainder of the population is on the Uintah and Ouray Indian Reservation, which is owned by the Ute Indian Tribe. The other seven populations are on lands under BLM, Indian, State, or private ownership.

Since the discovery of *G. suffrutescens* 50 years ago, its habitat has been declining. In fact, the species has been extirpated from its type locality, probably due to heavy grazing and the removal of stone for use in building. Large, linear flagstones are, or were, common in the species' habitat, and populations appear denser and more vigorous where these tuff fragments or clasts, which are in great demand, have not been removed. An even greater threat to *G. suffrutescens* could result from energy development, unless the species' needs are adequately considered during project planning. Its entire range is underlain by oil shale, which is likely to be

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Photo by Larry England

Among the factors threatening Glaucocarpum suffrutescens *has been habitat disturbance resulting from collection of flagstones around the plants for use in construction.*

Three Plants

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mined when conditions become economically favorable.

The proposal to list *G. suffrutescens* as Endangered included a provision for designating Critical Habitat. Eight areas totalling 7,360 acres (2,980 hectares) within the Uinta Basin were identified. They include the species' entire range except for a small, newly discovered population in Duchesne County that has not yet been adequately mapped. The proposed Critical Habitats are remote, about 2.5 hours over dirt roads from the nearest town. A Critical Habitat designation would not necessarily prohibit any kind of activity, but it would require Federal agencies to ensure that their activities are not likely to adversely modify the Critical Habitat. Current management is not likely to be affected to any major extent.

Comments on the listing proposal are welcome, and should be sent to the Regional Director, Region 6 (address on BULLETIN page 2), by November 4, 1985.

Available Conservation Measures

If the listing proposals are made final, all four species and their habitats will receive the full protection authorized for plants under the Endangered Species Act. Among the available conservation measures are the prohibitions on interstate or international trafficking in Endangered plants without a permit and the requirement for the FWS to develop and implement plans for their recovery. Further, under Section 7 of the Act, Federal agencies are required to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of listed species or adversely modify their Critical Habitat.

Section 9 of the Act makes it illegal to "remove and reduce to possession" Endangered plants from lands under Federal jurisdiction, and this provision would apply to parts of the remaining *Glaucocarpum suffrutescens* and *Eriogonum ovalifolium* var. *williamsiae* populations. Federal aid to State wildlife agencies for their own endangered species programs is available (through Section 6 of the Act) if they have approved Endangered Species Cooperative Agreements with the FWS; to date, California is among the States with such an agreement for Endangered plants, and it could apply for funds to aid in *Cypressus abramsiana* conservation if the species is listed.

The Snail Kite, an Imperiled Floridian

by Robin H. Fields
Jacksonville Endangered Species Field Station

The Florida snail kite, formerly known as the Everglade kite, is one of the State's most vulnerable species. Historically, this raptor occurred in areas throughout peninsular Florida, but widespread habitat modification reduced its range and numbers to the point that it was listed in 1967 as Endangered.

Slightly smaller than a red-shouldered hawk, snail kites are 15 to 18 inches (38 to 46 centimeters) in length and have an average wingspread of 45 inches (114 cm). Adult males are dark slate gray, while adult females are brown above with buff below. Both have a square tail with a white patch at the base, which from a distance resembles that of a marsh hawk. Females are slightly larger than males. Immature kites of both sexes resemble adult females except that their eyes are brown rather than red.

The snail kite's scientific name, *Rostrhamus sociabilis plumbeus*, is derived from Latin terms that describe the kite's characteristics: *rostrum* meaning beak, *hamus* meaning hook, *sociabilis* meaning a sharer, and *plumbum* meaning lead (colored).

The Snail Kite and its Prey

This bird has the most specialized known eating habit of any raptor in the world. It uses the fine long hook on its distinctively decurved bill to remove snails from their whorled shells. After holding a shell in its talons until the snail begins to emerge, the kite spears the snail and pulls it the rest of the way out of the shell.

In Florida, the snail kite feeds almost exclusively on the apple snail *(Pomacea paludosa)* , a freshwater mollusk that inhabits shallow open water areas within marshes. (There is some evidence to indicate that snail kites in Florida may also feed infrequently on an introduced snail, *Pomacea bridgesi*.) A snail kite will hover over an apple snail and then capture it by extending feet and talons into the water. Some captures are initiated from a low perch.

Despite the critical importance of the apple snail as the food source for the Endangered kite, comparatively little is known of the apple snail's ecological relationship to south Florida's wetlands. When marshes begin to dry, apple snails burrow into the mud to aestivate. Their ability to survive through drought is essential, not only to themselves but to the kite. In the southern Everglades, work has been done to determine the impacts of various water conditions on apple snail production. Marshes in this area typically experience seasonal water level fluctuations, and are usually without surface water during the latter part of the dry season. There are years, however, when water remains through all seasons.

In an Everglades study by Dr. James A. Kushlan (1975), it seemed that higher snail populations were attained under more permanent high water conditions, in contrast to conditions in which surface water reaches low levels in dry seasons. There appears to be a differential survival of large snails through dry periods, and increased juvenile recruitment in constantly high water. Thus, the average snail size was greater under conditions of fluctuating water levels, although total snail numbers may be fewer than if water levels were constant. It can be concluded that marshes along more permanent water bodies such as canal edges, impoundments, and lake edges may have higher snail populations than the Everglades.

Snail Kite Distribution

Snail kites are gregarious and nomadic, and during mid-day often soar

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Photo by Paul W. Sykes, Jr.

snail kite feeding its young

Snail Kite

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to great heights on thermals. They will often nest in loose colonies. Some dispersal can be expected following the nesting season, and dispersal is very pronounced during and after droughts. When disturbed, kites often circle low several times before flying away.

Snail kites require freshwater marshes with a distant horizon and a low vegetative profile. Their preferred habitat consists of extensive areas of open surface water 4 feet (1.2 meter) deep or less, like that in sloughs, spikerush *(Eleocharis)* flats, or wet prairies that retain some water throughout most years. Such areas are usually found within a larger marsh of sawgrass *(Cladium jamaicensis)* or cattails *(Typha domingensis* and *T. latifolia)* with scattered shrubs or small trees that serve as perches and nesting sites.

The main nesting season is January through August, although nests have been found in every month. Kites generally nest in coastal-plain willow *(Salix caroliniana)*. Kites will nest in cattails over water when preferred trees or shrubs are unavailable; however, these nests are usually unsuccessful because the cattails cannot support the weight of the nest. Their nests, usually constructed only 3 to 8 feet (0.9 to 2.4 m) above the water, are loose structures of dried sticks lined with fine green plant stems and leaves. The average clutch size is three. Renesting upon the loss of a nest is common; double brooding occurs when nesting begins early in the nesting season and snails are abundant.

Early snail kite population estimates are not available, but there were mentions of scattered populations of approximately 100 birds through the 1920's. In 1945, Alexander Sprunt, Jr., was the first to report that the kite was in serious trouble; he estimated that there were only 50 to 100 snail kites remaining. He had observed a steady decline at Lake Okeechobee and a total disappearance from the headwaters of the St. Johns River. The kite population has fluctuated dramatically, declining precipitously in years of drought. In recent years, the annual census has ranged from 65 in 1972 to 668 in 1984 (see chart). In the 1980's, a series of droughts caused serious declines in the population. Despite the December 1984 survey figure of 668 kites, south Florida's serious drought in spring 1985 may result once again in a drastically reduced snail kite population.

Habitat Modification

Snail kites once ranged over a wide expanse of habitat in peninsular Florida. Historically, more than one-fourth of the peninsula was covered with surface water during much of the year. The single most important factor responsible for the snail kite decline in Florida has been the loss of suitable freshwater marsh habitat resulting from drainage.

From 1881 to 1894, a number of drainage projects were initiated, and since 1905, major construction projects have been undertaken intermittently. Widespread drainage has permanently lowered the water table as much as 4.9 feet (1.5 m) in parts of south Florida and up to 6.9 feet (2 m) in the headwaters of the St. Johns River. Vast expanses of freshwater marshes have been completely destroyed, and much of the remaining marsh has been modified to the extent that it is no longer suitable habitat for snail kites.

In the late 1940's, the U.S. Army Corps of Engineers began to develop the Central and Southern Florida Flood Control Project to control freshwater runoff from the Everglades. In 1949, the Central and Southern Florida Flood Control District, today known as the South Florida Water Management District, was created. Flow of water to the sea was controlled, and three conservation areas were created in the Everglades. These conservation areas are freshwater storage sites regulated by levees and canals. Creation of the conservation areas secondarily benefited the snail kite population by flooding some or all of the area for several years. But the demands for fresh water for agricultural, municipal, and industrial uses are so great that there is not enough fresh water left to maintain large areas of flooded habitat suitable for kites on a long-term basis.

In addition, large areas of marsh have become infested with the exotic water hyacinth *(Eichhornia crassipes)*, which forms dense mats of vegetation obscuring the marshes where snail kites hunt. The exotic Australian punk tree *(Melaleuca quinquenervia)* is also invading the native sawgrass *(Cladium)* prairies, completely changing the prairies to swamps that are unsuitable for kite use.

Characteristically, as cyclic droughts occur, snail kites disperse to the small isolated wetlands and canal systems surrounding the Everglades, particularly those to the north, that still have water. Even these critically important drought related habitats, however, are disappearing as they are drained for development.

* * *

End of part one. Next month's conclusion discusses snail kite protection under the Endangered Species Act, implementation of the recovery plan, and habitat management strategies.

Photo by Jean Takekawa

Annual Snail Kite Census Results for Florida 1969-1985

Year	Total Number Of Kites	Severe Droughts
1969	98	
1970	120	
1971	72	1971
1972	65	
1973	95	
1974	81	
1975	110	
1976	142	
1977	152	
1978	267	
1979	431	
1980	651	1981-1982
1981	109	
1982	312	
1983	437	
1984	668	
1985	(to be conducted)	1985

Development of U.S. Export Programs for Repetitious Trade in CITES Appendix II Species

by Ronald Singer
Federal Wildlife Permit Office

In 1973, representatives of 80 countries met in Washington, D.C., to develop the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which took effect on July 1, 1975, after the tenth nation signed the treaty. There are now 88 CITES member countries that control species listed on one of three CITES Appendices. Species included on any of the three Appendices are internationally traded and are *a*) threatened with extinction (Appendix I); *b*) may become so threatened (Appendix II); or *c*) are listed on Appendix III for protection within the country of origin. CITES-listed species are subject to certain trade regulations that include a permit requirement for imports, exports, and reexports.

CITES member countries are required to designate one or more Management Authorities (MA) to issue permits authorizing international trade for listed species and to communicate with other members and the Convention Secretariat on CITES matters. Member countries are also required to designate one or more Scientific Authorities (SA) to make scientific decisions on international trade impacts. In the United States, the U.S. Department of the Interior is both the MA and the SA. The Federal Wildlife Permit Office (FWPO) of the U.S. Fish and Wildlife Service (FWS) acts as the MA for the Department, and the FWS Office of Scientific Authority acts as the SA.

CITES specifies that, among other things, the MA may not issue an export permit for a wild specimen of a listed species until the SA has advised that such export will not be detrimental to the survival of the species. Once this advice has been given, the MA must be satisfied that the specimen being exported was legally obtained and that the specimen is being exported in accordance with CITES regulations.

The MA may also issue a Certificate of Artificial Propagation for plants or a Certificate of Captive Breeding for animals, when there is proof that the specimens being exported were produced by these methods. Normally, no SA finding of nondetriment to the species is required in order to issue such documentation.

While many CITES Appendix II species are native to the U.S., seven species in particular are exported from this country in significant quantities. These species are: Alaskan brown or grizzly bear (*Ursus arctos*), Alaskan gray wolf (*Canis lupus*), American alligator (*Alligator mississippiensis*), bobcat (*Lynx rufus*), lynx (*Lynx canadensis*), river otter (*Lutra canadensis*), and American ginseng (*Panax quinquifolius*).

Developing an export program for these species that would satisfy CITES requirements involved the following considerations:

- Even though the export of these species from the U.S. is controlled by Federal law, it is FWS policy that individual States are the appropriate managers of resident native species. This is based on the broad trustee and policy powers of States to control and regulate the taking and possession of resident species within their boundaries.
- The SA decided that, for high-trade Appendix II species, it was more practical to develop "generic" findings for all exports of a particular species from the U.S. rather than multiple findings for each individual export. Also, permit applicants normally could not provide the information on which to make individual nondetriment findings
- The MA decided that the time required to process and grant multiple individual export permits for repetitious exports would be disruptive to the normal movement of these species in international commerce.

With these factors in mind, the SA decided to grant generic nondetriment findings for those States that have an adequate resource base to support export and to manage the species for continued survival.

The MA examined State wildlife management programs and found certain features common to all programs:

- harvest was usually controlled by an established taking season;
- hunters or trappers usually had to be licensed by the State;
- harvested animals had to be marked in some manner to identify the species, where and when it was taken, and the hunter or trapper; and
- the taker had to report the harvest of certain species to the State.

A working group of experts from the Federal and State governments was assembled by the FWS to determine what biological and management programs were needed to insure appropriate CITES export decisions.

In consideration of its own study findings and the working group recommendations, the MA decided that the U.S. CITES animal export program should rely upon State-applied tags as adequate proof that a specimen has qualified for export. Since 1978, States seeking generic export approval for CITES-listed resident species have developed and managed an FWS-approved tagging program, and have laws mandating the tagging of all legally taken CITES-listed animals before the animals or their skins are moved from the State. Tagging skins prior to shipping them from the State of origin is necessary; once skins move in interstate commerce, are accumulated by dealers and exporters, and sold through various sales or auctions, it is virtually impossible to differentiate one unmarked skin from another.

The MA developed a standardized export tag and legend, and began ordering tags for export-approved States in 1982. This eased the tag ordering process for the individual States and, because of the quantity ordered, reduced the cost of tags to the States. Beginning in 1983, the MA decided to both order and pay for CITES export tags in order to eliminate this cost to the States. Once properly tagged, CITES animal species are exported through an FWS-designated port where CITES documents are checked, validated, and collected if necessary.

The attachment of a tag to an animal skin is a relatively simple and easy method of certifying a specimen for export. But how does one handle the export of plant material like roots of American ginseng? These roots are relatively small, and may number 100-300 per pound when dried and ready for export. With more than 700,000 pounds of dried ginseng roots exported each year, the total number of individual roots boggles the mind. After due consideration, the MA decided that, because most bulk agricultural products are sold by weight, a State export program and certification system reporting legal take, State of origin, and weight of roots would satisfy the export requirements mandated by CITES.

Actual export of the State-certified ginseng occurs through a U.S. Department of Agriculture-designated port, where the CITES export document, shipping waybill, State certificates of origin, and shipment contents are examined by Agriculture port inspectors. If the shipment is in order, the CITES export document is validated by the port inspector, and waybills and State documents are collected for return to the MA. The MA then reviews all documents and returns certificates to the State of issuance for final verification.

Restoring the Colorado Squawfish to Arizona Waters

by James Johnson, Albuquerque Regional Office

On August 26, 1985, Colorado squawfish *(Ptychocheilus lucius)* came back to Arizona. North America's largest minnow (there are records of specimens 6 feet long and 80 pounds in weight), squawfish were once so plentiful in Arizona waters that early settlers pitchforked them out of irrigation canals for fertilizer. Many of those same settlers preferred squawfish as a food fish over the native trouts, and described the flesh as "white, flaky, and sweet."

Beginning in the early 1900's, dams on the Salt, Verde, Gila, and Colorado Rivers in Arizona began to alter riverine habitats. Changes in water temperatures, dewatering of many reaches, loss of flood flows, and the increase in nonnative fish species may have been the factors that led to the decline of the squawfish. By the time the Colorado squawfish was listed as an Endangered species (1967), it had already been almost extirpated from Arizona. The last Colorado squawfish from the Gila River drainage was found in a tributary (the Salt River) above Roosevelt Lake in 1951, and the last one from any Arizona waters came from below Glen Canyon Dam in 1969.

Today, wild populations of squawfish survive only in parts of the upper Colorado River basin, especially in the Green and Colorado Rivers of Colorado and Utah. The Colorado Squawfish Recovery Plan, signed in 1979, called for reintroducing the species back into Arizona waters. After extensive review, the Arizona Game and Fish Department recommended two areas for reintroduction: the Salt and Verde Rivers. Sections of these rivers still appear to contain suitable habitat. Brood fish were obtained from the Green River and artificial spawning efforts started at Willow Beach and Dexter National Fish Hatcheries (NFH).

In the late 1970's, the Fish and Wildlife Service (FWS) began to discuss the reintroduction of squawfish with land and resource managers in Arizona. Surprisingly strong opposition to reintroduction came from groups interested in further water development, and from grazing and mining interests within the watershed. The most common concern among these special interest groups was the possibility that the FWS might reintroduce an Endangered fish into waters from which it had been extirpated, and then use its presence to stop proposed or ongoing actions by invoking Section 7 of the Endangered Species Act, which bars Federal agencies from any actions likely to jeopardize listed species. Comments were also made that, once the fish had been reintroduced, the FWS could declare Critical Habitat in those streams, further blocking development.

In 1982, the Act was amended to include the category of "experimental populations." Two subcategories, "essential" and "non-essential," provided varying degrees of protection for reintroduced populations. (See story in BULLETIN Vol. IX No. 9.) Non-essential populations are those that are not vital to the survival or recovery of the species, and therefore are not subject to most Section 7 regulations. While regulations for the experimental population concept were developed in Washington, D.C., Region 2 geared up at Dexter NFH. The proposal to reintroduce Colorado squawfish into Arizona as a nonessential experimental population in the Salt and Verde Rivers was published on April 10, 1984. (See BULLETIN Vol. IX No. 5.) The final rule was published July 27, 1985, and took effect 30 days later.

On August 26, 1985, 296 squawfish were released into the Verde River near Perkinsville, Arizona. The fish were over 4 years old and ranged from 12 to 16 inches in length. Two days later, 200 one-year-old squawfish and 30,000 fry were placed into the Salt River. Releases of squawfish in Arizona will continue under the experimental designation for up to the next 10 years in an attempt to reestablish viable populations of this large, good-eating minnow back in its historical waters. The Arizona Game and Fish Department will monitor the success of the effort. The released squawfish, we hope, will prosper in the Salt and Verde Rivers and aid in the eventual recovery of this unique species.

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insects that are the subject of a listing petition recently received by the FWS.

* * *

On August 25, the CDFG invoked an emergency closure of the gill and trammel net fishery out to 20-fathoms between Cape San Martin and Point Piedras Blancas. This closure expands the area previously closed to gill and trammel net fishermen by an emergency order on January 27, 1985, and permanent legislation enacted on May 24, 1985. The new closure encompasses 17 miles of coastline and nearshore waters out to the 20-fathom contour.

The previous 15-fathom closure apparently did not eliminate the entanglement of southern sea otters *(Enhydra lutris nereis)* in gill and trammel nets. Since the 15-fathom closure went into effect, 10 of the Threatened otters have drowned in nets set legally outside 15-fathoms. Seven of the ten otters drowned off Ragged Point, the area now closed to gill and trammel net fishing out to 20-fathoms by the August 25 emergency closure. The CDFG hopes that this latest closure will significantly reduce sea otter mortality.

* * *

The State of Hawaii's Division of Forestry and Wildlife has announced that it intends to move its Endangered species captive breeding project from Pohakuloa on the island of Hawai'i to Olinda on the island of Maui. The proximity of the Pohakuloa facility to U.S. Army ordnance and aircraft training areas may be having a detrimental effect on the behavior of breeding birds. It is hoped that modifications to a now unused prison at Olinda will be completed by this December so that captive Hawaiian crows or 'alala *(Corvus hawaiiensis)* can be moved there prior to their spring breeding season. Captive individuals of other Endangered species, such as the nene or Hawaiian goose *(Nesochen sandvicensis)*, and the koloa-maoli or Hawaiian duck *(Anas wyvilliana)*, will be moved subsequently.

* * *

The 1985 summer palila *(Loxioides bailleui)* count was conducted during July 15-24 by FWS and Hawaii Division of Forestry and Wildlife staff members. Preliminary analyses resulted in a population estimate of 1,867 birds, plus or minus 676. This represents a 42-percent increase from the 1984-1985 winter estimate and an 8-percent decrease from summer 1984. Hopefully, this recent increase represents a real recovery from the all-time population low during winter 1984-1985.

* * *

Of the 23 whooping crane *(Grus americana)* eggs translocated to Grays Lake National Wildlife Refuge (NWR) in Idaho from the breeding grounds in Canada, 20 hatched and 3 were infertile. Eleven of the 20 chicks have been banded. Whether or not the remaining birds survived was not known by early October.

* * *

Region 2—Dr. Rod Drewien reported that the Rocky Mountain whoopers' fall staging activities were about 2 weeks earlier than normal. During such staging periods, the whoopers concentrate in grainland-wetland complexes with

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sandhill cranes *(Grus canadensis)*, where they feed on waste grains that remain after harvest.

After several weeks on the staging areas, the whooping cranes begin their migration into the San Luis Valley of Colorado. The whoopers' early staging activities may be the consequence of the summer drought, hard frosts in mid-August that killed the insects used as food, and an early, cool fall. These cranes seldom migrate before October 1, but this year only five to six whoopers and several hundred sandhill cranes remained at Grays Lake NWR on that date.

A juvenile whooping crane that struck a powerline about 20 miles southeast of Grays Lake NWR was found on September 23. He was treated for several days in a veterinary clinic in Pocatello, Idaho, and then transferred to Patuxent Wildlife Research Center (PWRC) in Laurel, Maryland. The likelihood of recovery is slim due to severe leg and abdominal injuries.

Two other whooping cranes decided to migrate separately this fall, east of the Rockies. The first, which summered in western Wyoming near Danielsville, appeared near Hudson, Colorado, on September 10 and remained there through the month. Local landowners were contacted, and other steps were taken to ensure the bird's safety. The second whooper, which summered 15 to 20 miles from the first, was reported near Severance, Colorado, on September 24. It was using an area of about one square mile, consisting of three waterfowl hunting club leases. Approximately a 3-square mile area was closed informally to hunting through cooperation of the clubs and landowners for a period following the opening of the Canada goose *(Branta canadensis)* and sandhill crane hunting season, which began September 28. These two whoopers were only the second and third of the Grays Lake flock confirmed to be migrating east of the Rocky Mountains since the flock was established

* * *

An aerial survey of whooping cranes conducted over part of the breeding grounds at Wood Buffalo National Park on September 20 by the Canadian Wildlife Service confirmed the survival of at least 15 of the 16 young-of-the-year birds banded there during mid-August. Early migrants had moved into Saskatchewan by the survey date.

* * *

Based on radio telemetry of an adult female ocelot *(Felis pardalis)* in early September, a 2-week-old female ocelot kitten was located on the Laguna Atascosa NWR in south Texas. Linda Laack, a graduate student at Texas A&I University, discovered the "den" site containing the kitten as part of her ocelot ecological studies on the refuge. The den consisted of a barren earth depression under a bush in a very dense thorn forest. The kitten was examined and photographed, and appeared to be in good health. Radio telemetry data indicate that the mother is caring for the kitten. This is the first den site located and documented for this Endangered species. The kitten also represents the third generation of ocelots involved in this ongoing study.

* * *

One hundred and four individual plants of Knowlton's cactus *(Pediocactus knowltonii)* were reintroduced into the species' historic range in northwestern New Mexico in early September. In the wild, the species is known from only one location, where an estimated 7,000 plants grow in an area of less than 25 acres. The reintroduced plants were taken as cuttings from wild plants last spring and reared in a greenhouse until they had developed to the point that they could survive in the wild.

The reintroduced plants will be monitored carefully to determine if this is a valid recovery technique. The project is a cooperative effort between the FWS, the State of New Mexico, and The Nature Conservancy. The Bureau of Land Management just concluded a 2-year field survey of Knowlton cactus potential habitat and was unable to locate additional populations.

* * *

Release of masked bobwhites *(Colinus virginianus ridgwayi)* on Buenos Aires NWR appears to be going very well. Final acquisition of the property in southern Arizona was completed on August 1, 1985, and by mid-September, 363 masked bobwhites had been released. Fifty-three sterilized male Texas bobwhites, a non-endangered taxon, have adopted masked bobwhite chicks, but 14 rejected their foster offspring. The wild Texas birds teach their young wards something about survival, but cannot contaminate the masked bobwhite gene pool. Over 1,000 masked bobwhite chicks have been received from the PWRC; an estimated 2,500 masked bobwhites will be received in total and released by mid-October.

* * *

Region 3—Wildlife managers and researchers throughout the Midwest met in Ohio during the week of September 23 to discuss the management of endangered wildlife. This meeting of endangered species program coordinators has taken place annually for the last 10 years. Agenda topics this year included the Endangered Species Act, bald eagle restoration, and nongame programs. The attendees also had an opportunity to exchange information on State programs. Region 3 States represented at the meeting included Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. Also in attendance were representatives from Ontario, Canada, and the endangered species coordinator from New York State.

Winous Point Shooting Club, a managed hunting club on one of Lake Erie's prime marshes, hosted this year's meeting in cooperation with the Ohio Department of Natural Resources' Division of Wildlife and the FWS. The club has been a long-time supporter of endangered wildlife and nongame management.

* * *

Region 4—In two unrelated incidents, federally listed Endangered species were taken recently in Florida. The first case involved a commercial fisherman found with a butchered West Indian manatee *(Trichechus manatus)* calf in his boat on May 16, 1985, in the St. Lucie River. FWS Special Agents and Florida Marine Patrol officers conducted an investigation that led to the arrest of four men. All four were indicted on Federal charges of possessing and killing a manatee. Charges were dropped against three, but one man received a $750 fine and one-year prison sentence. An initial plea bargain for probation was rejected after three previous fishing convictions were uncovered.

In the other incident, a Key West man was arrested after a road chase and was found to possess a dead Key deer *(Odocoileus virgianus clavium)*. The dead animal, a pregnant doe, had been shot three times. Carrots and a .22-caliber rifle were also found in the truck. The Federal Government plans to press charges under the Endangered Species Act (and possibly the Lacy Act), and the State of Florida plans to charge the suspect for violation of State law.

* * *

On July 1, 1985, the Florida Department of Natural Resources (DNR) assumed responsibility for the Manatee Salvage Program from the FWS. The Florida DNR will initially operate the program with Federal support from Endangered Species Act (Section 6) funds. Personnel from Sea World of Florida and the University of Miami will cooperate with DNR biologists in salvage and necropsies.

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The Manatee Salvage Program has been, and continues to be, a crucial source of data for evaluating human impacts on manatees. Since 1974, 931 carcasses have been recovered. Approximately one-third of the deaths were found to be human-related; 210 of them were attributed to boat or barge collisions. Thus far, the 1985 mortality rate is similar to the 1984 rate, which resulted in the highest annual mortality documented (131).

* * *

The U.S. District Court for the District of Columbia has made a ruling concerning the propriety of cutting timber for southern pine beetle control in four wilderness areas—the Black Creek and Leaf Wilderness Areas in Desota National Forest, Mississippi; Caney Creek Wilderness Area in Quachita National Forest, Arkansas; and Kisatchie Hills Wilderness Area in Kisatchie National Forest, Louisiana. The Sierra Club sought a preliminary injunction based on alleged violations of the National Environmental Policy Act and the Endangered Species Act. The court recognized that cutting may be necessary to prevent harm to the red-cockaded woodpecker (*Picoides borealis*), and allowed that cutting could take place in wilderness areas for the sole purpose of preventing harm to this species, provided that it is done in strict accordance with the U.S. Forest Service wildlife habitat management manual. The FWS must also be notified in writing of the need for cutting in wilderness areas.

* * *

The results of field surveys and status reviews conducted by FWS biologists in Jackson, Mississippi, indicate that the ringed sawback turtle (*Graptemys oculifera*) warrants a listing proposal, while the yellow-blotched sawback (*G. flavimaculata*) does not. The ringed sawback is endemic to areas of the Pearl River and a tributary, the Bogue Chitto River. A listing proposal for this species is warranted due to threats from potential habitat modification expected to result from numerous projects that are authorized, planned, or proposed by the U.S. Army Corps of Engineers.

The yellow-blotched sawback turtle, endemic to the Pascagoula River system in Mississippi, was found abundantly in the river and its many bayous. No significant threats to this species surfaced during the status review.

* * *

Region 5—During September, the Region 5 Endangered Species office staff was involved in revising recovery plans for three Endangered species: the Plymouth red-bellied turtle (*Pseudemys rubriventris bangsi*), the Maryland darter (*Etheostoma sellare*), and the Virginia round-leaf birch (*Betula uber*). These revised plans will more accurately identify the recovery needs of each of the three species, based on the most recently acquired biological data.

* * *

Region 7—With a small population of Aleutian Canada geese (*Branta canadensis leucopareia*) now established on Agattu Island, transplant efforts are being directed to Amchitka Island. During August, the staff of the Aleutian Islands Unit NWR successfully transplanted 124 geese from Buldir Island to Amchitka. Annual transplants to Amchitka of 100 to 150 geese will continue until a self-sustaining population is established. Based on efforts to reestablish geese on Agattu, at least three transplants to Amchitka will be needed.

* * *

The FWS and cooperating agencies in Alaska have banded more than 1,200 peregrine falcons (*Falco peregrinus*) since the initiation of a comprehensive banding program in 1979. Band returns from Mexico, El Salvador, Brazil, and Argentina, and from the States of Washington, Texas, Louisiana, Virginia, and Georgia, have provided valuable insight into the migration and wintering habits of peregrines nesting in Alaska. The most recent return is the first from western South America: a peregrine banded as a nestling on Alaska's Charlie River in 1984 was shot in Ecuador in March 1985.

* * *

Region 8 (Research)—Over the past year and a half, personnel from the Western Energy and Land Use Team (WELUT) have been helping to evaluate the consequences of water development activities on Endangered fish habitat in the Upper Colorado River Basin. The Colorado squawfish (*Ptychocheilus lucius*) and humpback chub (*Gila cypha*) are the species of principal concern. Their habitat has been significantly altered by the construction of more than 20 major dams in the basin, and water development activities continue to be proposed to support urban expansion, irrigation, and electrical power generation.

The FWS has been charged to develop river flow and temperature recommendations for important stream reaches throughout the basin, primarily the Colorado and Green Rivers and their major tributaries. These recommendations must provide for the maintenance of Endangered fish habitat and must operate within the constraints of water supply, future water demands, and existing legal requirements. Members of the Instream Flow Group at WELUT have been assisting in most phases of the process for establishing these flow and temperature recommendations. Much of the evaluation revolves around the use of "Network Habitat Analysis" techniques, which interrelate the effects that alternative water management scenarios have on flows, temperatures, and the components of aquatic microhabitat, such as the water's depth and velocity.

Results of the analysis will be forwarded to the interagency Colorado River Coordinating Committee, chaired by the FWS. The results will be used to develop biologically based, legally defensible recommendations for water management in the basin.

* * *

The FWS Office of Habitat Resources has provided $200,000 to complete fencing on the upper Hanawi watershed on Maui. The watershed contains nearly 25 percent of the habitat of the critically Endangered po'ouli (*Melamprosops phaeosoma*) and is also the central point of distribution of the Endangered Maui parrotbill (*Pseudonestor xanthophrys*) and 'akohekohe or crested honeycreeper (*Palmeria dolei*). The fencing project will exclude non-native pigs from an enclosed area and allow PWRC biologists to study the response of native birds and vegetation as part of ongoing research in the Hawaiian Islands.

* * *

One of three Puerto Rican parrot (*Amazona vittata*) chicks that are being radio-monitored by PWRC biologists to determine post-fledging movements and survival was found dead 5 weeks after fledging. Since fledging, this parrot, along with its two nest mates, had remained within the nest valley, generally within 200 to 400 meters from the nest cavity. The radio transmitter, some feathers, and a few bone fragments were recovered under a tree root mass, apparently where a scavenger had carried the body before consuming it. Because of the scant remains, cause of death could not be positively determined.

* * *

A karyotyping technique to determine the sex of Endangered whooping cranes is now being used at the PWRC. The technique, a modification of the procedure developed at the San Diego Zoo for sexing California condors, involves identification of the sex chromosomes in avian lymphocytes. In 1985, 16 whooping cranes and 15 Mississippi sandhill cranes (*Grus canadensis pulla*) were sexed using this technique. This information will be used in the pairing of subadult cranes for captive propagation.

Recovery Plan Update

The following recovery plans were recently approved: *San Francisco Garter Snake Recovery Plan* (9/11/85); *Coachella Valley Fringe-toed Lizard Recovery Plan* (9/11/85); *Delta Green Ground Beetle/Solano Grass Recovery Plan* (9/11/85); and *Leon Springs Pupfish Recovery Plan* (8/14/85).

Copies of recovery plans become available for purchase about 6 months from their date of approval. Requests for copies should be made to the Fish and Wildlife Reference Service, 6011 Executive Boulevard, Rockville, Maryland 20852; telephone 800/582-3421.

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED U.S. Only	ENDANGERED U.S. & Foreign	ENDANGERED Foreign Only	THREATENED U.S. Only	THREATENED U.S. & Foreign	THREATENED Foreign Only	SPECIES* TOTAL	SPECIES HAVING PLANS
Mammals	25	19	234	4	0	22	304	23
Birds	60	13	141	3	1	0	218	54
Reptiles	8	6	60	8	4	13	99	18
Amphibians	5	0	8	3	0	0	16	6
Fishes	37	4	11	19	3	0	74	39
Snails	3	0	1	5	0	0	9	7
Clams	23	0	2	0	0	0	25	19
Crustaceans	3	0	0	1	0	0	4	1
Insects	8	0	0	5	0	0	13	10
Plants	82	5	1	23	2	2	115	43
TOTAL	254	47	458	71	10	37	877	220**

*Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, Olive ridley sea turtle, and leopard.

**More than one species may be covered by some plans, and a few species have more than one plan covering different parts of their ranges.

Number of Recovery Plans approved: 185
Number of species currently proposed for listing: 18 animals
29 plants

Number of Species with Critical Habitats determined: 91
Number of Cooperative Agreements signed with States: 42 fish & wildlife
17 plants

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New Notice

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Category 2 comprises taxa for which information now in possession of the FWS indicates that proposing to list is *possibly* appropriate, but for which conclusive data on biological vulnerability and threats to their survival are not currently available to support proposed rules. Further research and field study may be needed to ascertain the status of the taxa in Category 2, and it is likely that many will be found to not warrant listing.

Category 3 comprises taxa that were once being considered for listing, but that are not currently receiving such consideration because they are thought to be extinct (Category 3A), taxonomically invalid (Category 3B), or no longer subject to identifiable threats (Category 3C).

A total of 594 species, subspecies, and vertebrate populations are covered by the review, and are categorized as shown in the following table:

	Category 1	Category 2	Category 3	Total
Fish	17	111	20	148
Amphibians	1	52	9	62
Reptiles	4	49	19	72
Birds	8	44	13	65
Mammals	5	224	18	247
Total	35	480	79	594

The notice requests information concerning the status, taxonomy, and distribution of the identified taxa; recommendations concerning possible designation of Critical Habitat; documentation of threats; and nominations for additional candidates. Information and comments may be sent to the Director (OES), U.S. Fish and Wildlife Service, Washington, D.C. 20240. Copies of the notice may be obtained by writing to this same address. The list of candidate taxa will be amended periodically to reflect new information.

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ENDANGERED SPECIES

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