

# ENDANGERED SPECIES

## Technical Bulletin

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

### Service Proposes Seven Plants As Endangered

The Service has proposed during the past month to add seven more plants to the U.S. List of Endangered and Threatened Plants. This brings the total number of plants currently proposed for listing under the Act to 17. An account of each of the newly proposed species follows:

#### Arizona Cliffrose

The *Cowania subintegra* (Arizona cliffrose), an endemic to Arizona, has been proposed as an Endangered species (F.R. 7/15/83). Only two widely separated populations of the cliffrose are known to exist, and both are subject to cattle grazing. One population could be additionally impacted by mining and highway maintenance.

The plant was first collected by Danon and Crooks in 1928, and described by Kearney in 1943. The first population discovered was the extant Burro Creek population in southeastern Mohave County. The second known population is in Graham County.

*Cowania subintegra* is an evergreen shrub reaching 75 centimeters in height that has rose-like yellow flowers. It grows in shallow gravelly loams over limestone bedrock. This plant, and other limestone endemics, is valuable in the

study of the biogeography and evolution of Southwestern flora.

At present, the Bureau of Land Management (BLM) holds nine mining claims in the area of the Burro Creek population, but it is not known to what extent the mineral resources of the area will be developed. Areas within the population have been bladed, destroying habitat, apparently to expose sub-surface formations for mineral exploration.

A graded road and a portion of the Mohave-El Paso Natural Gas pipeline pass through the Burro Creek populations. Maintenance work for both involves occasional blading that prevents any plant establishment in these areas. Some habitat destruction happened during construction of a high voltage power line through the Burro Creek population. A high line pole storage area in the same vicinity effectively removes that space from habitation by the plant.

A portion of the Graham County population occurs on the U.S. Highway 70 right-of-way, on top of a hill through which the highway cuts. Widening of the highway would be the greatest threat to *Cowania subintegra*. Herbicides sprayed on top of the hill (8-20 feet above the road) could also harm the

plants. Current maintenance procedures do not threaten the *Cowania* or its habitat, and there are no plans to widen the highway.

There is no evidence of *Cowania* reproduction except in the Graham County population on the U.S. 70 right-of-way, where there are immature plants. Further studies are needed to determine whether this situation is due to grazing pressures. Grazing by domestic livestock is a threat to both populations, together with additional grazing from feral burros and mule deer at the Burro Creek site.

No existing Federal or State laws protect *Cowania subintegra*, nor is there a management plan in effect for either population. Restrictions concerning the removal of plants from Federal lands are extremely hard to enforce, especially when the habitat is as easily accessible as is that of *Cowania*. Therefore, the Service has determined it not prudent to designate Critical Habitat for the species, at this time.

Comments from all interested parties regarding this proposal must be received by September 13, 1983. Public hearing requests were due by August 29, 1983. Comments and materials on the

*Continued on page 3*

### Three Rio Yaqui Fishes Proposed With Critical Habitat

The Service has proposed to list the Yaqui chub (*Gila purpurea*) as Endangered, and the beautiful shiner (*Notropis formosus*) and the Yaqui catfish (*Ictalurus pricei*) as Threatened species (F.R. 7/15/83). The same action proposed Critical Habitat for all three fishes on the San Bernardino National Wildlife Refuge (SBNWR), Chochise County, Arizona.

In the past, these fishes were found throughout the Rio Yaqui basin and in a few smaller drainages. However, the range of all three species has been significantly reduced, primarily due to habitat destruction. Remaining populations are in danger of being subjected to intense competition and genetic swamping through the release of closely related exotics.

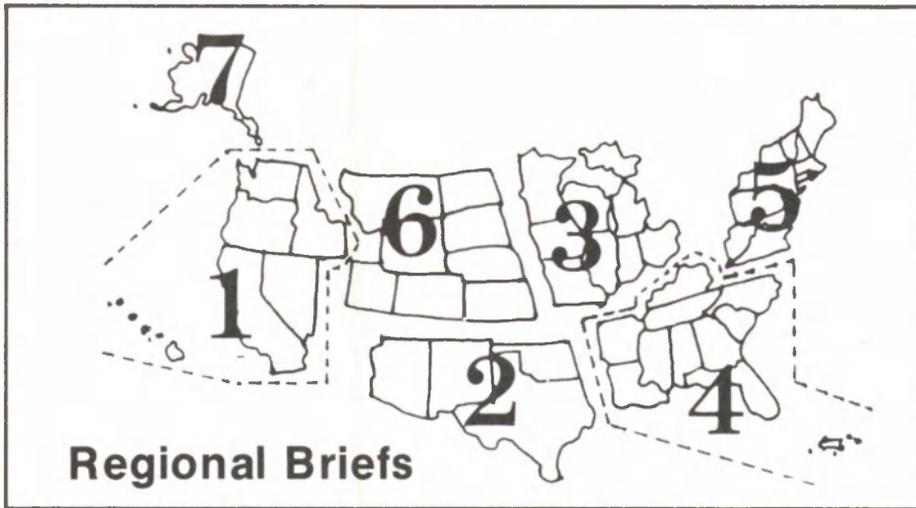
The remaining United States populations of Yaqui chub are limited to a few springs on the San Bernardino Ranch (now the SBNWR) and Leslie Creek,

both in southeastern Arizona. The shiner and catfish have been extirpated from the United States. The aquatic habitats of SBNWR, proposed as Critical Habitat, provided habitat for one of the two known populations of Yaqui chubs. The refuge also provides expansion

*Continued on page 5*



Yaqui chub



The NASA Island electric fence has been successful at keeping out mammalian predators. Skunk tracks were found outside the fence, but not inside, and the terns do not seem to be affected by the fence. But on June 16, during a check of NASA Island, it was discovered the electric fence was not operating properly: several strands were grounded out from interference and vandalism on the refuge by trespassers. The fence was then repaired and is operating properly. Trespass on NASA Island and other unauthorized activities have plagued our programs for the past several years, and we have discussed these problems with the Seal Beach Naval Weapons Station security staff.

FWS law enforcement agents from Idaho and Nevada met recently with representatives of the States of Idaho and Wyoming, the National Park Service, the U.S. Forest Service, and the Grizzly Bear Recovery Team to coordinate patrol efforts for this year. FWS agents have been constructing horse corrals in Zone 1, the prime grizzly bear (*Ursus arctos horribilis*) management zone, and will conduct mounted patrols to keep humans out of the bear area.

The spring 1983 cui-ui (*Chasmistes cujus*) spawning migration up the Pyramid Lake Fishway has ended. The run began May 21, peaked May 26, and ended June 20. Approximately 6,000 were taken in the fish handling building, and released in the lower Truckee River to spawn. This is the second largest run since the fishway was completed in 1976. Through radio-tagging 25 of the adult migrants, we have been able to determine migratory behavior and spawning habitat preference. Now we are monitoring the emergence and emigration behavior of this year's progeny. This information will be used to better define stream flow requirements of cui-ui during their reproductive cycle.

The Sacramento Endangered Species Staff conducted a meeting to explore the possibilities of developing a Conservation Agreement for the Inyo brown towhee (*Pipilo fuscus eremophilus*). This subspecies is a candidate for Threatened status. Population estimates indicate there are not more than 150 of the birds remaining. The towhee occurs in desert riparian habitat in the Argus Mountains, Inyo County, California. Habitat destruction or modification caused by mining, livestock grazing, feral burro use, and water diversion are potential threats. The meeting was attended by representatives from the China Lake Naval Weapons Center, the Bureau of Land Management, and private landowners.

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

**Region 1**—California least tern (*Sterna albifrons browni*) activity has picked up at Seal Beach National Wildlife Refuge since the last report period. Currently, there are at least five pairs

active on NASA Island. In light of these developments, additional pairs could still nest this year. The total colony size would probably be small to moderate due to the large percentage of vegetational coverage. Other sites in Orange County are having a successful season so far.

**U.S. Fish and Wildlife Service  
Washington, D.C. 20240**

Robert A. Jantzen, *Director*  
(202-343-4717)  
Ronald E. Lambertson  
*Associate Director and  
Endangered Species Program Manager*  
(202-343-4646)  
John L. Spinks, *Chief,  
Office of Endangered Species*  
(703-235-2771)  
Thomas J. Parisot, *Chief  
Federal Wildlife Permit Office*  
(703-235-1937)  
Clark R. Bavin, *Chief,  
Division of Law Enforcement*  
(202-343-9242)

**TECHNICAL BULLETIN STAFF**  
Michael Bender, *Acting Editor*  
(703-235-2407)

**Regional Offices**

**Region 1**, Suite 1692, Lloyd 500 Bldg., 500 N.E. Multnomah St., Portland, OR 97232 (503-231-6118); Richard J. Myshak, *Regional Director*; William F. Shake, *Assistant Regional Director*, Sanford R. Wilbur, *Endangered Species Specialist*.  
**Region 2**, P.O. Box 1306, Albuquerque, NM 87103 (506-766-2321); Michael J. Spear, *Regional Director*; Conrad A. Fjetland, *Assistant Regional Director*;

**U.S. Fish and Wildlife Regions**

**Region 1:** California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

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

James Johnson, *Endangered Species Specialist*.

**Region 3**, Federal Bldg., Fort Snelling, Twin Cities, MN 55111 (612-725-3500): Harvey Nelson, *Regional Director*; John S. Popowski, *Assistant Regional Director*; James M. Engel, *Endangered Species Specialist*.

**Region 4**, Richard B. Russell Federal Bldg., 75 Spring St., S.W., Atlanta, GA 30303 (404-221-3583): James W. Pulliam, *Regional Director*; John I. Christian, *Assistant Regional Director*; Alex B. Montgomery, *Endangered Species Specialist*.

**Region 5**, Suite 700, One Gateway Center, Newton Corner, MA 02158 (617-965-5100): Howard Larsen, *Regional Director*; Stephen W. Parry, *Assistant Regional Director*; Paul Nickerson, *Endangered Species Specialist*.

**Region 6**, P.O. Box 25486, Denver Federal Center, Denver, CO 80225 (303-234-2209): Galen Buterbaugh, *Regional Director*; John D. Green, *Assistant Regional Director*; Don Rodgers, *Endangered Species Specialist*.

**Region 7**, 1101 E. Tudor Rd., Anchorage, AK 99503 (907-276-3800, ext. 495): Keith M. Schreiner, *Regional Director*; Jon Nelson, *Assistant Regional Director*; Dennis Money, *Endangered Species Specialist*.

Continued on page 8

# Rulemaking Actions

## Service Proposes 7 Plants

Continued from page 1

proposal, preferably in triplicate, should be sent to the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103.

### Johnston's Frankenia

The Service has proposed listing a plant, *Frankenia johnstonii* (Johnston's frankenia), as Endangered (F.R. 7/8/83). This species is known from only two counties in Texas, and one locality in Mexico. About 1,000 plants exist within a 35-mile radius in Texas (Starr and Zapata Counties); several hundred plants occur in Nuevo Leon, Mexico.

The most distinctive features of *Frankenia johnstonii* are its blue-green color and wiry appearance. The plants are perennial shrubs, usually about 30 centimeters tall, that produce small white-petaled flowers from September to May. It was first collected and described in 1966 by Dr. D. S. Correll.

The six known populations of *Frankenia johnstonii* are located in heavily grazed areas and show signs of having been browsed by cattle. All populations are on rangeland in poor condition and show low reproduction. Any habitat change brought about by chaining or plowing could impact the species.

If this plant is listed as Endangered, certain conservation authorities would become available and protective measures may be undertaken for it. These would include increased management of the species and its habitat, and the possibility of land acquisition, if necessary, through Section 5 of the Act. All known populations occur on private land; thus, the Act would not restrict land use per se, unless Federal activities, funds, or authorizations are involved. Critical Habitat is not being proposed because of the potential for collecting and vandalism.

Comments and materials concerning the proposal to list this plant as Endangered should be sent, preferably in triplicate, to the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103. Comments must be received by September 6, 1983. Public hearing requests were due by August 22, 1983.

### Costa Rican Plant

The "quemador del Pacifico" (*Jatropha costaricensis*), a rare plant known only from a small population in Costa Rica, has been proposed by the Service for listing as an Endangered species (F.R. 7/15/83). Fire, trampling by livestock, wood gathering, and the potential nega-

tive genetic effects of small population size are the main threats to the species.

*Jatropha costaricensis* is a member of the spurge family, Euphorbiaceae. This shrub to small tree (2 to 5 meters tall) has grayish leaves and inconspicuous male and female flowers on separate plants. It grows on a steep rocky limestone slope, and is a member of the maritime tropical dry forest community. The single population occurs somewhat above sea level near Playas del Coco, Guanacaste Province, Costa Rica.

Trampling by livestock, cutting of other trees, and housing developments are modifying, and could further affect, the species' habitat. There is a village within ¼ mile of the habitat, and cattle trails run through the area. Dry season fires, often kindled by vandals, are frequent in this part of Costa Rica, and a single fire could destroy the entire *Jatropha costaricensis* population. In addition, it is hypothesized that the species may have been more widespread in the past, and that a moist climatic trend in the last few thousand years has reduced its range and genetic variability. Fewer than 50 individuals of the species are known to exist in the single population. Costa Rican law provides no protection for the plant.

The Service was petitioned to list *Jatropha costaricensis* in 1979 by Sr. Luis J. Poveda of the Museo Nacional, San Jose, Costa Rica. He indicated that the species is a phylogeographically significant relict from drier climatic conditions in the past, and that the habitat is being destroyed. In response to the petition, the Service published a notice of review in the July 31, 1979, *Federal Register*. Three professional botanists commented in support of the need to list, and no data were provided to indicate that a listing is not warranted. The proposed rule makes the finding that the petitioned action on this species is warranted, in compliance with Section 4(b)(3)(B)(ii) of the Endangered Species Act, as amended in 1982.

In addition to trafficking restrictions, several other conservation and protective measures will be authorized if the proposed rule becomes final. Joint action on the plant with Costa Rican authorities could be facilitated through the international cooperation provisions in Section 8 of the U.S. Endangered Species Act, or through the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (to which Costa Rica and the U.S. are parties). Section 8A(e) of the Act was amended in 1982 to give greater emphasis to plant conservation through this Convention. *Jatropha costaricensis* is not currently on the Annex to the Convention, but if the listing proposal is made final, the Service will determine if it should be recommended for addition.

Comments on the proposed listing of

*Jatropha costaricensis* as an Endangered species are invited from the Government of Costa Rica and from all interested agencies, organizations, and individuals, and should be received by the Director, U.S. Fish and Wildlife Service (OES), Washington, D.C., 20240 by October 13, 1983. Requests for a public hearing on the proposal were due by August 29, 1983.

### Pedate Checker-mallow and Slender-petaled Mustard

Two plant species, *Sidalcea pedata* (pedate checker-mallow) and *Thelypodium stenopetalum* (slender-petaled mustard) have been proposed as Endangered species (F.R. 7/15/83). Both species grow in the few remaining wet, alkaline meadows in the Big Bear Basin of San Bernardino County, California.

After documented loss of more than 85 percent of original meadowland, the checker-mallow survives in only about 15 acres at three localities, and the mustard in only about 16 acres at four localities. Residential and commercial land development, and other man-made changes in water levels and drainage patterns contributed to the loss of habitat. The remaining colonies of both plants are very small and vulnerable, and face prospects of additional habitat loss.

The pedate checker-mallow is a multi-stemmed, perennial member of the mallow family. The slender-petaled mustard is an herbaceous short-lived perennial. About 80 percent of the remaining habitat for both species is subject to development, much of it anticipated in the next few years. In a few areas, off-road vehicle activity has eliminated colonies and damaged habitat.

Although both plants are listed by the State of California as Endangered, State law has not successfully removed the threats facing the species in their natural habitats. Federal listing would provide some additional protection for the species and provide new options (including recovery programs) for their protection and management.

The Service does not consider the designation of Critical Habitat for these two plants to be prudent at this time. All known colonies of the pedate checker-mallow and all but one colony of the slender-petaled mustard occur on private lands, where direct Federal involvement is minimal. Critical Habitat designation would likely focus attention on the plants and their rare status, and might encourage incidental takings, or takings for collections or commercial purposes. No current or proposed Federal programs that would adversely affect the habitats of these species are known.

Comments on this proposal must be received by September 13, 1983. Public

Continued on page 4

## Service Proposes 7 Plants

Continued from page 3

hearing requests were due August 29, 1983. Comments should be submitted to: Regional Director, U.S. Fish and Wildlife Service, Floyd 500 Building, Suite 1692, 500 N.E. Multnomah Street, Portland, Oregon 97232.

### Ashy Dogweed

The Service has proposed *Dyssodia tephroleuca* (ashy dogweed), a relict species known only from one area in Zapata County, Texas, as an Endangered species (F.R. 7/22/83). The continued existence of the plant is threatened by overgrazing, possible further loss of habitat by roadside blading, brush clearing, and by possible collecting and vandalism.

The ashy dogweed was historically known from two populations in southwestern Texas; however, the Zapata County population is the only known remaining site. This 1-acre area contains approximately 1,300 individuals, most of which are on private property; part of the plants, however, are on a State highway right-of-way. Protection plans need to be developed so that roadside maintenance is done in a way compatible with the continued existence of *Dyssodia tephroleuca*. The State of Texas currently has no law protecting the plant. Due to its very restricted geographic distribution and accessibility, Critical Habitat is not being proposed.

The ashy dogweed is a perennial herb with stiff erect stems up to 30 centimeters in height. The flower heads (both ray and disk florets) are yellow to bright yellow and about 2.5 centimeters in diameter. Flowering occurs from March to May, depending on rainfall. The plants occur in fine, sandy-loam soils in open areas of a grassland-shrub community.

Comments from all interested parties, preferably in triplicate, must be received, by September 20, 1983. Public hearing requests must be received by September 6, 1983. All correspondence regarding this proposal should be sent to the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103.

### Key Tree-cactus

The Key tree-cactus (*Cereus robinii*) has been proposed for listing by the Service as an Endangered species (F.R. 7/29/83). *Cereus robinii* occurs in the Florida Keys and Cuba, where its range and numbers have been drastically reduced. The few remaining populations are jeopardized by continuing urbanization of habitat and by horticultural exploitation.

*Cereus robinii*, a member of the cactus family (Cactaceae), consists of two varieties, *Cereus robinii* var. *robinii* and *Cereus robinii* var. *deeringii*. It was originally described in 1864 as *Pilocereus robinii* by the French botanist Lemaire. (Other past synonyms have been listed in the proposed rule.) This columnar species is the largest of the native Florida cacti, with its erect, branched stems reaching heights of 8 meters (about 25 feet). Its beautiful flowers, which open in the late afternoon or evening, are 5-6 centimeters long and vary from white to green to purplish. The fruit is a dark red berry 3-5 centimeters in diameter. This attractive cactus is jeopardized in part by its potentially high demand for horticulture.



Photo by Clifton E. Nauman

*Cereus robinii* is the only native Florida cactus that stands upright in maturity and is considered a tree.

Historically, *Cereus robinii* was known from at least 11 sites in the Florida Keys and 2 in Cuba. Today, however, only five populations remain in the Keys, and the species has suffered similar losses in Cuba. This cactus is already considered endangered by the International Union for the Conservation of Nature and Natural Resources. Habitat destruction is the primary cause of the decline. *Cereus robinii* occurs in rocky hardwood hammocks, a habitat type that is disappearing rapidly in the Florida Keys. This area has been undergoing rapid residential and recreational development, resulting not only in the loss of *Cereus robinii* populations but of the entire hardwood hammock habitats where they once grew. Only two of the remaining U.S. sites where the species still exists are protected; one is in Key Deer National Wildlife Refuge and the other is in Long Key State Park. The privately owned tracts are especially vulnerable through the continued development of the Keys. Although *Cereus robinii* is listed as endangered under Florida law, offering some protection from taking, intrastate transporting, and selling, this status does not protect the plant's habitat.

Because of its attractiveness and rarity, *Cereus robinii* also is particularly vulnerable to over-collection. Vandalism is another problem that the species has already experienced. These activities could result in the extirpation of *Cereus robinii* from its few remaining sites. Even on public lands, the enforcement of taking and vandalism prohibitions has been found to be difficult. For these reasons, the Service has decided not to propose Critical Habitat for *Cereus robinii* at this time. Publishing Critical Habitat maps would pinpoint the populations and make them even more vulnerable. Nevertheless, if the proposed Endangered listing is approved, *Cereus robinii* will receive the habitat protection authorized under Section 7 of the Endangered Species Act.

Comments and materials concerning this proposal should be sent to the Endangered Species Field Station, U.S. Fish and Wildlife Service, 2747 Art Museum Drive, Jacksonville, Florida 32207. Comments from all interested parties must be received by September 27, 1983. Public hearing requests must be received by September 12, 1983.

Actions leading to Federal protection for the plants reviewed above (except *Jatropha costaricensis*) began in 1973 with the inclusion of plant conservation measures in the Endangered Species Act. Section 12 of the 1973 Act directed the Smithsonian Institution to compile a report on endangered, threatened, and extinct plant species. The resulting 1975 report included the six plants proposed

Continued on page 8

# Rio Yaqui Fishes

Continued from page 1

habitat for the Yaqui chub and prime reintroduction sites for the beautiful shiner and the Yaqui catfish, which are still found in Mexico.

## Background

The proposed Rio Yaqui fishes were first collected and described from San Bernardino Creek just south of the Arizona-Sonora border in the latter half of the 19th century. Except for minimal available information on the basic habitat preferences, little is known about the biology of the Rio Yaqui fishes. Both in 1966 and in 1973, the Yaqui chub was recommended for listing, but no action was taken because its status in Mexico was undetermined.

In 1978, the Service contracted with biologists from Arizona State University and the University of Michigan to survey the status of fishes in the Rio Yaqui system of Mexico. These workers found only one specimen of the Yaqui chub after extensive collection efforts throughout the Rio Yaqui drainage. This final report, *Fishes of the Rio Yaqui, Mexico and United States, 1979*, also noted reduction for the beautiful shiner and the Yaqui catfish and expressed concern for these species. In 1979, the American Fisheries Society recommended special concern for the status of the beautiful shiner and the Yaqui catfish, and described the Yaqui chub as endangered.

## Threats to the Species

All three of the proposed Rio Yaqui species are seriously affected by a variety of habitat modifications. Activities such as arroyo cutting, stream headwater diversion, impoundment construction, and excessive pumping of underground aquifers have caused diminished spring flows in most of the species' habitat. All three fishes existed in San Bernardino Creek until its spring flow was severely diminished; its remaining aquatic habitat was destroyed by cattle. Remaining U.S. Yaqui chub habitat is also threatened by gradually diminishing spring flow. Many fish populations in Mexico are also being adversely affected by the modification of river systems into canal systems for irrigation agriculture.

Extant populations of the beautiful shiner and the Yaqui catfish are seriously threatened by the introduction of closely related exotic species. Future releases of the red shiner (*Notropis lutrensis*), which is currently widely established in Arizona, into the Rio

Yaqui system may reduce the beautiful shiner population. The Yaqui catfish may be similarly affected by expanding populations of the channel catfish (*Ictalurus punctatus*) and blue catfish (*Ictalurus furcatus*) that have already been established in the Rio Yaqui drainage. The introduction of exotics into Mexico is expected to continue at an increased rate as the interior portions of Sonora and Chihuahua are developed.

The Rio Yaqui fishes receive no legal protection in Mexico. Arizona law provides protection for the Yaqui chub (as a "Group II species" - a species in danger of being eliminated from the State), but the State law does not provide protection of essential habitat. The beautiful shiner and the Yaqui catfish are listed on Group I (species extirpated from Arizona that may possibly be reestablished) of the Arizona list of threatened and unique wildlife.

Subsection 4(6)(8) of the Act requires that proposals to determine Critical Habitat include a brief description and evaluation of activities that may adversely modify the area if undertaken, or may be affected by such designations. The proposal reports that any activity that would lower the groundwater level to the extent that the water flow from springs on SBNWR would be reduced could adversely impact the Critical Habitat. In addition, the release of exotic or nonnative fishes could also adversely impact the Critical Habitat.

## Effects of the Rule

If these species become listed as Endangered or Threatened, the prohibitions of Section 9 of the Act would make it illegal for any person subject to the jurisdiction of the United States to import or export, ship in interstate commerce in the course of commercial activity, or sell or offer for sale these species in interstate or foreign commerce. It also would be illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that was illegally taken.

Other regulations codified in Title 50 of the Code of Federal Regulations provide for the issuance of permits to carry out otherwise prohibited activities involving listed species under certain circumstances. The two fishes proposed as Threatened, the Yaqui catfish and beautiful shiner, have a proposed special rule that would allow take in accordance with applicable State law, and allow these fishes to be managed as Threatened species.

If finalized, the proposed rule would require Federal agencies to insure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of these three fishes and would require them to insure that their actions do not result in the destruction or adverse modification of their



Photo by James E. Johnson

Arroyo cutting is one of the threats to the springs and streams that provide habitat for the three proposed fishes.

Critical Habitat. The only proposed Federal activity that may potentially affect the proposed Critical Habitat is geothermal exploration in the San Bernardino Valley that will be regulated and licensed primarily by the Bureau of Land Management (BLM). This proposed activity, which is beyond the boundaries of the SBNWR, could possibly affect underground aquifers supplying surface water to the proposed Critical Habitat. BLM will be allowed to proceed with the project in the area as long as the Critical Habitat water supplies are protected.

It should be noted that listing these species does not specifically preclude geothermal development in the area, and that a Critical Habitat designation may not affect the BLM activity. Possible impacts would be addressed during conferral or consultation with the Service as required by Section 7 of the Act, as amended.

## Comments Requested

Any comments or suggestions concerning any aspect of the proposed rule are solicited from the public, other concerned governmental agencies, the scientific community, industry, private interests, or any other interested party. Comments must be received by September 13, 1983. Public hearing requests were due August 29, 1983. Comments and requests should be addressed to the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87130.

## Rulemaking Action Continued Kangaroo Imports Allowed to Continue

Commercial importation of hides and products from three Threatened species of kangaroos may continue under a special rule published recently by the Service (F.R. 8/1/83). A separate proposed rule to delist the three species is still under review (see the May 1983 BULLETIN).

### Background

In 1974, the red (*Macropus rufus*), eastern gray (*M. giganteus*), and western gray (*M. fuliginosus*) kangaroos were listed by the United States as Threatened species, and importation of hides and products was prohibited at that time. The listing and import ban was intended to remain in effect until the Australian States developed adequate conservation plans and demonstrated that trade would not jeopardize the continued existence of the three species. Seven years later, in an April 29, 1981, *Federal Register* rule, the Service acknowledged that the Australian Government had met both criteria. The import ban was lifted for a 2-year trial period, although these three species remained listed as a precaution. On November 10, 1982, Australia petitioned the Service to allow continued import of kangaroo products and hides into the U.S. after the close of the 2 years, and to remove all three kangaroos from the Threatened species list. The accompanying data were judged sufficient to propose these actions since they allayed some of the previous concerns. Separate proposed rules to allow continued importation and to delist were published

in the April 8, 1983, *Federal Register*.

Many persons and organizations had anticipated the proposal to allow continued imports. Over 1,000 comments were received from late 1982 through the date of the proposal, over 90 percent of them in opposition. All of these were considered as part of the rulemaking process. Another 195 letters were received during the official comment period, all but 2 opposing the proposal. Most of this correspondence presented basically the same points, and the Service's responses can be found in the August 1 rule.

The bases of the decision to allow continued kangaroo imports were summarized in the rule notice: 1) all of the Australian States have developed effective kangaroo management plans; 2) each State now uses aerial surveys to estimate and monitor kangaroo numbers, and these surveys demonstrate that kangaroos number well into the millions; 3) Australia is a large country with many sparsely settled areas, and kangaroos have adapted well to agricultural practices; 4) the Australian Government has a continuing policy of setting up large national parks and preserves, and much of this land is undisturbed kangaroo habitat; 5) the taking of kangaroos is to relieve pressures in specific areas where they conflict with human interests, thereby helping to forestall a return to the indiscriminate killings of kangaroos in the past; and 6) the removal of the U.S. kangaroo import ban has had no measurable adverse effects on the species over the past 2 years.

## Sampson's Pearly Mussel Proposed for Delisting

The Service has proposed to remove Sampson's pearly mussel (*Epioblasma (=Dysnomia) sampsoni*) from the U.S. List of Endangered and Threatened Wildlife (F.R. 7/15/83). This action is based on a review of all available data that indicate that this species is extinct.

The only known historical localities of the species are portions of the Wabash River in Illinois and Indiana, and the Ohio River near Cincinnati. A series of dams have been built in these areas, eliminating the species' gravel and sand bar habitat. No specimens have been collected in over 50 years despite repeated sampling within its range.

At least once every 5 years, the Service conducts a review of each listed species to determine if it should be removed from the list or reclassified from Endangered to Threatened (or vice

versa) status. As a part of this review for *E. sampsoni*, the Service contracted with Dr. Arthur Clarke to determine its present status. He has recently completed a survey of the species' historic range as well as interviews with many commercial clambers and shell buyers. Dr. Clarke was unable to find specimens or recent evidence of the species and believes it to be extinct. A substantial reward was offered for any information concerning *E. sampsoni* and this effort was also unsuccessful.

Comments and materials concerning this proposal should be sent to the Regional Director, U.S. Fish and Wildlife Service, Federal Building, Fort Snelling, Twin Cities, Minnesota 55111. All comments must be received by September 13, 1983. Public hearing requests were due August 29, 1983.

## Raptor Exemption Rule Finalized

The Service has published a final rule that implements new regulations identifying conditions under which birds of prey listed as Endangered or Threatened under the Endangered Species Act of 1973, as amended, are exempted. (F.R. 7/8/83). The rule implements the so-called "raptor exemption" of the Act passed by Congress in 1978 and later amended in 1982.

The rule now exempts holders of qualifying raptors only from the prohibitions of Section 9(a)(1) of the Act. The remaining prohibitions found in Section 9 do apply, particularly the need to satisfy any applicable requirements of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) to import or export "exempt" raptors listed on any appendices to CITES.

Raptors qualifying for exemptions from Section 9(a)(1) of the Act are only those raptors held in captivity or in a controlled environment in the U.S. on November 10, 1978, and their progeny. The rule further clarifies that the progeny of any exempted raptor is also exempted only until it is intentionally returned to the wild.

The July 7 rule also amends regulations promulgated under the Migratory Bird Treaty Act to establish uniform standards and procedures for engaging in the propagation of birds of prey. It enables raptor propagators and falconers to purchase, sell, or barter certain specially marked, captive-bred raptors both in the U.S. and foreign countries. Comments on this rule, which was proposed on January 12, 1983, are summarized in the *Federal Register* account.

## Change Anticipated For Snail Darter Status

The Service is reviewing the status of the snail darter (*Percina tanasi*) in preparation of a proposal to either reclassify or delist the species. An advance notice of this proposed action was recently published (F.R. 7/21/83).

The Service's Snail Darter Recovery Plan, developed by the Snail Darter Recovery Team, indicates that based on the snail darter's present status, the species could be reclassified from Endangered to Threatened status. Neither the recovery team nor the Service feels sufficient evidence is presently available to allow the species to be removed from the official U.S. List of Endangered and Threatened Wildlife. Intensive field survey work being conducted this summer could change that tentative conclusion, however.

The snail darter was listed as an Endangered species on November 10, 1975. At that time, the only known population was threatened by the imminent completion of Tellico Dam and the flooding of the fish's gravel shoals habitat in the Little Tennessee River. Introductions of the darter into three other streams, prior to and subsequent to the completion of the Tellico Reservoir project, have thus far proved successful only in the Hiwassee River, Polk County, Tennessee.

Snail darters were discovered in South Chickamauga Creek, Hamilton County, Tennessee, on November 1, 1980, and later in Catoosa County, Georgia. Searches in the Tennessee River and its tributaries resulted in the discovery of snail darters in three additional locations.

In addition to data on the species and comments on the notice, the Service is requesting information on environmental and other impacts that would result from a proposal to either reclassify or delist the snail darter. Comments from all interested parties must be received by September 19, 1983. They should be sent to Field Supervisor, Asheville Endangered Species Field Office, U.S. Fish and Wildlife Service, Plateau Building, Room A-5, 50 South French Broad Avenue, Asheville, North Carolina 28801.

## Proposed Changes in Taking Regulations

Revisions of the Federal regulations on Endangered species (50 CFR 17) have been proposed to implement the 1982 Endangered Species Act Amendments (F.R. 7/8/83). These proposed revisions would 1) provide, under limited circumstances, for permits to take Endangered and Threatened species incidental to, and not the purpose of, an otherwise lawful activity, and 2) add a prohibition against removing, and reducing to possession, Endangered and Threatened plants from areas under Federal jurisdiction without a special permit.

If the proposal is adopted as published, an applicant for a permit for incidental take would have to submit a detailed conservation plan to the Service, which would then evaluate the plan to ensure its effectiveness and a minimum negative impact on listed species. Details on the incidental take and plant taking proposals are available in the July 8 *Federal Register*, pp. 31417-31423. The comment period for the proposed rule ends September 2. Comments should be addressed to the U.S. Fish and Wildlife Service, Federal Wildlife Permit Office, P.O. Box 3654, Arlington, Virginia 22203.

*The Endangered Species Act of 1973, as amended in 1979, designates the Secretary of the Interior as both the Management Authority and the Scientific Authority of the United States, for the purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Management Authority responsibilities are delegated to the Associate Director - Federal Assistance; Scientific Authority responsibilities are delegated to the Associate Director - Research.*

*The Service's Wildlife Permit Office (WPO) functions as staff to the U.S.*

*Management Authority for CITES, assuring that wildlife and plants are exported or imported in compliance with laws for their protection and issuing permits for legal trade of these species. The Service's Office of the Scientific Authority (OSA) functions as staff to the U.S. Scientific Authority for CITES. OSA reviews applications to export and import species protected under CITES, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.*

## Fourth CITES Meet Adopts Species Changes

The Conference of Party Nations that met in Gaborone, Botswana, on April 19-30, 1983, for the fourth CITES meeting made a number of decisions on amendments to Appendices I and II of that international treaty. The Service recently announced these amendments and requested comments on whether the United States should enter a reservation on any of them (F.R. 7/5/83).

The adopted amendments are quite lengthy and, therefore, are not reprinted here. Please consult the *Federal Register* (Vol. 48, No. 129, pp. 30732-30733) for a complete listing. Comments regarding the taking of reservations by the U.S. on any of the amendments were due by July 25, 1983. The Service received no comments by that date, and did not recommend taking any reservations.

### Botswana Meeting

Over 300 participants from 62 countries and non-governmental organizations met in Botswana for the fourth gathering of CITES parties. This event marked the tenth anniversary of the Convention.

The Convention amendments included the transfer of five whale species from Appendix II to Appendix I. The listing of the minke whale (*Balaenoptera acutorostrata*) and the pygmy right whale (*Caperea marginata*) will take effect on January 1, 1986, coinciding with the beginning of a total moratorium on commercial whaling decided by the International Whaling Commission (IWC) last year. Inclusion on Appendix I of the other species, the Brydes whale (*Balaenoptera edeni*), beaked whales (*Berardius* spp.), and bottle-nosed

whales (*Hyperoodon* spp.), is immediate.

Proposals by certain African countries to transfer the leopard (*Panthera pardus*) from Appendix I to Appendix II were opposed by delegates who feared such an action would lead to the revival of the fur trade. A compromise resolution was agreed upon by the Parties that leaves the leopard on Appendix I. This agreement establishes procedures for the export and import of pelts under a strictly managed quota of leopards that could be hunted and traded as personal effects from seven African countries, without re-activating the fur trade. This decision will be reviewed at the next CITES meeting in 2 years.

The U.S. delegation withdrew proposals for the removal from Appendix II of the bobcat (*Lynx rufus*) and lynx (*Lynx canadensis*), and certain populations of the grizzly bear (*Ursus arctos*) and Alaskan gray wolf (*Canis lupus*) that are not listed under the Endangered Species Act. This was done after establishing that these populations could be treated as look-alikes of other species or populations in Appendix II.

The CITES parties transferred three parrot species, the canine macaw (*Ara glaucogularis* (=caninde)), yellow-cheeked conure (*Ognorhynchus icterotis*), and red-fronted macaw (*Ara rubrogenys*) from Appendix II to I. More than two dozen cactus species were transferred from Appendix II to I and over a dozen other plants were added to either Appendix I or II (U.S. proposals).

The fifth Conference of Party Nations will be held in 1985. Colombia offered to host this meeting, but a final decision regarding the location has not yet been made by the standing committee.

## Western Hemisphere Nations Gather To Strengthen CITES

Wildlife conservation leaders from 21 Western Hemisphere nations attended a 2-week seminar, August 1-12, 1983, at the Department of State for an in-depth study of ways to improve the implementation and enforcement of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The delegates participated in presentations by the CITES Secretariat, the U.S. Fish and Wildlife Service, the Canadian Wildlife Service, and several other government and private agencies on mutual problems and experiences in administering the 81-nation treaty that marks its tenth anniversary this year.

CITES was negotiated and signed in Washington in 1973. Its purposes are to promote international cooperation in conservation, and to protect endangered wildlife and plants against over-exploitation from international trade. It lists wild animals and plants under one of three categories, depending on the degree of threat, and regulates trade through a system of permits. The Interior Department, through the U.S. Fish and Wildlife Service, administers CITES for this country.

"This seminar is an example of the cooperative spirit among the community of nations that has made CITES a significant force for curbing the threat of species' extinction caused by trade," said G. Ray Arnett, Assistant Secretary of the Interior for Fish and Wildlife and Parks. "CITES is a dynamic, working treaty and is expanding rapidly. It is important that implementation and enforcement keep pace with that growth."

A major obstacle to proper implementation of CITES in the Western Hemisphere, as in most of the world, is the lack of personnel in government agencies who understand the treaty. To improve this situation, the CITES Secretariat is sponsoring a series of seminars on implementation. The Service has assisted Secretary-General Eugene Lapointe in planning and coordinating the sessions, which will serve as a model for future seminars. Goals are to establish direct working relationships between the CITES Management Authorities of the Western Hemisphere nations, strengthen the network of CITES administrators throughout the region, encourage organization of adequate government structures for CITES implementation, and increase regional cooperation in dealing with CITES-related problems.

Simultaneous English-Spanish trans-

lations were provided during the first week of presentations by all the participating countries, conservation organizations, and the following U.S. government agencies; the Departments of Interior, State, Agriculture, Justice, and Commerce. The second week of the seminar was held at the Department of the Interior, with onsite inspection of import and export activities at the John F. Kennedy Airport in New York and the Newark, New Jersey, Seaport.

The World Wildlife Fund-U.S. and the United Nations Environmental Programme helped fund the seminar. Western Hemisphere nations participating are: Antigua and Barbuda, Argentina, Bahamas, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Ecuador, Guatemala, Guyana, Mexico, Nicaragua, Panama, Paraguay, Peru, Santa Lucia, Suriname, Trinidad and Tobago, United States, Uruguay, and Venezuela.

## Key Tree-Cactus

*Continued from page 4*

during July 1983; the report was treated as a petition by the Service, and its main list was published as a notice of review on July 1, 1975. This action was followed on June 16, 1976, by a proposal to list a number of plants, including these six plants.

Due to subsequent requirements of the 1978 amendments to the Endangered Species Act, the 1976 proposal was withdrawn. Further amendments in 1982 placed a new deadline of October 13, 1983, on pending petitions; proposal of these six plants before the deadline satisfied the petition requirement. The plants have now been repropounded on the basis of new data.

## Effects of Final Rules

If these proposals are approved as published, all seven will be listed under the Act as Endangered species. Section 7 of the Act requires all Federal agencies to ensure that any activities they authorize, fund, or carry out are not likely to jeopardize the species' continued existence. With regard to trade, all of the prohibitions contained in 50 CFR 17.61 on interstate and international trafficking would apply to the proposed plants. Further, the 1982 Endangered Species Act Amendments make it unlawful to remove and reduce to possession Endangered plant species from areas under Federal jurisdiction or to sell them, offer them for sale, or deliver, receive, carry, transport, or ship them in the course of a commercial activity. Special permits for certain otherwise prohibited activities could be requested under 50 CFR 17.62 and 17.63 from the Federal Wildlife Permit Office.

If any of these species are listed, the Service will also review them to determine whether they should be placed upon the Annex of the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, which is implemented through Section 8A(e) of the Act, and whether they should be considered for other appropriate international agreements.

## Regional Briefs

*Continued from page 2*

Six biologists from the Sacramento Endangered Species Office spent 2 days in Coachella Valley mapping the remaining habitat of the Coachella Valley fringe-toed lizard (*Uma inornata*). The lizard inhabits only areas of active sand dunes, and this habitat type is rapidly disappearing in the Coachella Valley as development for housing and recreational facilities increases. Only the area between Interstate Highway 10 and State Highway 111 was examined. The total acreage of undeveloped habitat that still might contain lizards is estimated at 35,000 acres. The information will be used to help local governments and the FWS protect remaining lizard habitat and recommend compensation programs to developers.

**Region 2**—Spilling of reservoirs along the Colorado River may result in nesting problems for the Yuma clapper rail (*Rallus longirostris yumanensis*); however, Colorado squawfish (*Ptychocheilus lucius*) may benefit. Willow Beach National Fish Hatchery (NFH), below Hoover Dam, uses cold (55°F) hypolimnetic waters to raise trout. With Hoover Dam spilling warm (70°F) waters from Lake Mead, the trout had to be moved out of Willow Beach, leaving room to raise Colorado squawfish. Between Dexter NFH and Willow Beach, Region 2 hopes to produce some 200,000 fingerling squawfish this autumn for reintroduction into Colorado and Arizona waters.

\* \* \*

The Fish and Wildlife Service issued a jeopardy opinion to the Federal Highway Administration regarding an Endangered orchid, the Navasota ladies'-tresses (*Spiranthes parksii*) and the expansion of State Highway 6 south of Bryan, Texas. The opinion was issued because the Service believes the action will contribute to the demise of the species. This is one of many planned development activities in the area. The opinion offered two alternatives: (1) utilize an alternative alignment for the pro-

posed highway expansion that would not affect the orchid, or (2) reduce the cumulative impacts to the Navasota ladies'-tresses by the protection of the main population of the species in its natural habitat.

On June 29-30, two male ocelots (*Felis pardalis*) were captured and radio-collared on a previously untrapped beach area in southeast Texas. A total of 10 ocelots have now been captured and collared during the status survey contracted to Texas A&I University at Kingsville, Texas. Thus far, the study has indicated that the ocelot population is widely distributed and exists solely in the few remaining areas of dense brush.

The Masked Bobwhite Recovery Plan is currently being revised and updated. The bobwhite's (*Colinus virginianus ridgwayi*) status has worsened since the plan was initially approved in 1978. Recent evidence suggests that a small population that had been reestablished on a private ranch in Arizona in the mid-1970s may have disappeared as a result of a summer drought and intensive cattle grazing. Only one wild population is known to remain, and it is in Mexico. A recent field inspection of the area revealed increasing threats from livestock grazing, land clearing, and planting of buffalo-grass (an African exotic).

**Region 5**—Efforts to establish additional populations of an Endangered plant, the Furbish lousewort (*Pedicularis furbishiae*), along a now protected segment of the upper St. John River (Maine) are beginning to show signs for optimism. Seeds from mature plants were collected and planted along the river banks in 1981. Many of the seeds successfully germinated and the young plants are growing vigorously. This effort is in accordance with the approved Furbish Lousewort Recovery Plan.

During July, Roger Hogan of the FWS Region 5 Office and pilot Clyde Bolin brought back six bald eaglets (*Haliaeetus leucocephalus*) from Manitoba, Canada, for hacking in Massachusetts and New Jersey. Craig Koppie of the FWS Washington Office and Keith Cline of the National Wildlife Federation participated by climbing the nest trees and carefully bringing down the young birds.

The Pittston Company has abandoned its plans to build a large, \$1 billion marine terminal and oil refinery at Eastport, Maine. In an announcement from the Pittston corporate headquarters, the company said that the "escalation of costs and changes in world oil market conditions since the project was proposed 10 years ago have made it uneco-

nomical." Concerns had been voiced earlier about impacts the development could have had on the bald eagle and possibly other listed species in the area (see the March 1979 BULLETIN).

The Regional Director has signed the Robbins Cinquefoil Recovery Plan . . . The State of Massachusetts has passed a non-game wildlife tax check-off program to raise additional funds for management of these species . . .

**Region 6**—A meeting of the Black-footed Ferret Advisory Team (BFAT) was held on July 8 in Meeteetse, Wyoming. The advisory team consists of representatives from the Wyoming Game and Fish Department, Bureau of Land Management, U.S. Forest Service, U.S. Fish and Wildlife Service, University of Wyoming, and conservation groups, as well as private landowners and a State lands commissioner. The main item of discussion involved increasing efforts to locate, capture, and mark ferrets (*Mustela nigripes*), while minimizing impacts to the population. Litter surveys are ongoing in the Meeteetse area; marking and radio-tracking studies are scheduled to begin in the near future. The team also reviewed a request by a wildlife film producer to prepare a proposal for a documentary on the Meeteetse ferret project. The next BFAT meeting was tentatively scheduled for September 22.

A final report by the FWS Colorado River Fishery Project entitled, "Movements, Migration and Habitat Preference of Radiotelemetered Colorado Squawfish; Green, White and Yampa Rivers, Colorado and Utah," was published in March 1983. According to the report, a total of 31 Colorado squawfish were implanted with radio modules in 1980 and 1981. However, only 16 individuals were tracked longer than 3 months due to radio module failure, poor radio reception, etc. Two movement patterns were observed in the implanted squawfish: sedentary and highly mobile. The total distance moved by sedentary fish averaged 18 kilometers (km), while the total distance moved by 10 mobile fish averaged 245 km. This difference in behavior in the two groups was linked to sexual maturity, with mature fish undertaking spawning migrations. A physical characterization of the spawning habitat indicated that Colorado squawfish spawned at a 22°C temperature over rubble substrate. Water depths and velocities at the primary study site ranged from 0.9 to 2.1 meters depth and 0.0 to 0.1 meters per second velocity.

A limited quantity of the updated version of "Endangered and Threatened Fishes of the Upper Colorado River Basin" is now available. Information

provided by the FWS Colorado River Fishery Project and Colorado Division of Wildlife's endangered species monitoring and larval fish sampling program have been incorporated, and each section has been updated to December 1982.

**Region 7**—Partial results from this summer's peregrine falcon survey and banding efforts are available, and once again there is reason for optimism. A record high number of American peregrine falcon (*Falco peregrinus anatum*) pairs have nested along the upper Yukon River in 1983. Endangered species biologist Skip Ambrose observed 27 pairs on the upper Yukon River, a number higher than that recorded by Tom Cade during his early survey work in the 1950s. Although the number of young produced per pair was not as high as for some years, the record number of breeding pairs suggests that more young birds are entering the breeding population and nesting for the first time.

Elsewhere in interior Alaska, the picture is not as bright. The number of breeding pairs on the Porcupine River has declined slightly from last year's record 14 pairs, and the Tanana River, which formerly had as many as 14 pairs, continues to support only 5. No firm results are yet available from our contractors working on Arctic peregrine falcons (*Falco peregrinus tundrius*) along the North Slope, although early reports are 30 occupied sites produced 65 young.

In the Aleutian Islands, final preparations are underway for the Aleutian Canada goose (*Branta canadensis leucopareia*) trap and transplant operation. As part of the effort to reestablish geese on Agattu Island, up to 200 goslings and adults will be trapped on Buldir Island and released on Agattu.

The Region 7 Endangered Species Staff is filming peregrine falcon and Aleutian Canada goose field activities this summer to document FWS recovery efforts and to inform other programs of our work.

## Attention Readers

If you are receiving a duplicate copy of the BULLETIN, or if your office continues to receive copies addressed to individuals no longer employed by your agency, please let us know so that we can eliminate these entries from our mailing list. Please refer to the zip code as well as to the addressee when you call or write regarding changes in the mailing list. Thank you.

—The Editor

# RECOVERY PLANS APPROVED

## Moapa Dace

The Moapa dace (*Moapa coriacea*) is a small member of the minnow family, and is the sole member of its genus. This fish, known only from the Warm Springs area of southern Nevada, inhabits several springs and their outflows that comprise the headwaters of the Muddy River. (The Paiute name for muddy is moapa, and the stream is frequently referred to as the Moapa River.) Habitat damage and exotic fish introductions caused a serious decline in this species, and it was listed by the Service in 1967 as Endangered. It is also classified as a Rare species by the State of Nevada. The Moapa Dace Recovery Plan, prepared by Donald W. Sada, Fish and Wildlife Service, Reno, Nevada, and approved by the Director on February 14, 1983, delineates the steps needed to return the species to a secure status.

Even prior to the influences of habitat degradation and introduced species, the range of the Moapa dace was restricted to the Muddy River headwaters where thermal springs maintain water temperatures between 28°C and 32°C. The fish was not present downstream where the water is cooler and more turbid. In 1948, when the Moapa dace was described by C.L. Hubbs and R.R. Miller, it was thought to occupy 25 springs and about 10 miles of spring outflow. However, recent investigations have found adult Moapa dace occurring in low numbers in restricted portions of 3 springs and less than 2 miles of spring outflow. Reproduction has been documented only in a 100-yard length of spring outflow on private property owned by Frederick Aparcar.

### Habitat Loss

By far the greatest factor in the decline of native western fishes, particularly desert species with restricted ranges, is habitat alteration or destruction. Moapa dace are known to be adversely affected by: 1) physical habitat disturbances, such as channelization and vegetation control; 2) chemical toxicity from chlorination of waters converted to resort swimming facilities; and 3) displacement by exotic species. In the Warm Springs area of the Muddy River, extensive and drastic modifications to the aquatic habitat have occurred.

All of the springs on the private Desert Oasis Warm Springs Resort and the former 7-12 Resort (which is now the Moapa National Wildlife Refuge) have been lined with concrete and/or gravel, channelized, chlorinated, and cleared of vegetation so completely that the Moapa dace was extirpated. The springs on the Aparcar property have been channelized

and piped by the Moapa Valley Water Company for diversion to domestic uses. Fortunately, the environment in the outflow from one of the Aparcar Springs remains adequate to provide for the only known reproducing population of the species. Although the springs found on property owned by the Church of Latter Day Saints (LDS) also have been heavily modified, one of the outflows still supports a reduced number of adult Moapa dace. Most or all of the springs that originally contained Moapa dace still flow, but modification and current use of these habitats has brought the species to the brink of extinction.

### Introduced Species

Another major factor in the extirpation or decline of many desert fishes has been the introduction of exotic fishes and other aquatic organisms. In the 1960's, researchers W.L. Minckley, J.E. Deacon, and B.L. Wilson noted immediate declines in the Moapa dace following establishment of the shortfin molly (*Poecilia mexicana*) in the Muddy River, and attributed this effect to both competitive interaction and the introduction of exotic fish parasites. In addition, recent investigations have shown competition between the Moapa dace and another introduced species, the mosquitofish (*Gambusia affinis*). The fathead minnow (*Pimephales promelas*), goldfish (*Carassius auratus*), bullhead catfish (*Ictalurus nebulosus*), and other introduced fishes also are known to occur in the Muddy River, but downstream of the Moapa dace habitat.

### Recovery Actions

Because the Moapa dace has no close relatives and there are no species with similar requirements from which knowledge of Moapa dace ecology can be inferred, studies of this species' life history are necessary to begin recovery. An example of the difficulties in recovering a species about which little is known is the 1972 transplant of 20 Moapa dace to

the Shoshone Ponds, a facility near Ely, Nevada, constructed by the Bureau of Land Management (BLM) for Endangered fishes. Although the relocated fish survived for at least a month, they eventually perished for unknown reasons. While research on Moapa dace ecology is proceeding, interim subobjectives for recovery include the conservation of spring and outflow habitat on the Moapa NWR, Desert Oasis Warm Springs Resort, LDS, and Aparcar properties. These waters will be managed not only for the Moapa dace, but also for the other four fishes and a snail that are endemic to the Muddy River.

The habitat conservation effort has already begun. In 1979, the 7-12 Resort was repeatedly put up for sale by the owner and subsequently purchased by the Service as the Moapa NWR. This aquatic habitat had been severely modified for public swimming. Since the area was purchased, it is no longer used for swimming and water quality has been improved by stopping the use of chlorine. An aquatic habitat management plan for the refuge is being developed by the Service with the cooperation of the Nevada Department of Wildlife. Extensive rehabilitation is being planned to reconstruct native fish habitat in springs on the refuge. Among the rehabilitation measures being considered are filling pools with rock/gravel substrate, recreating a meandering channel, and reestablishing aquatic plants. Fish barriers will be placed in the stream to hinder the further spread of exotic fish, and techniques will be developed to manage or eliminate introduced species already established. Proper management of the groundwater aquifer discharging in the Warm Springs area can be accomplished with the assistance of the BLM under a memorandum of understanding. Once the habitat is secure, Moapa dace can be stocked into the refuge waters. A fence will be constructed and signs erected to discourage public swimming or unauthorized introductions of exotic fishes. Public day-use for picnics and environmental education will be encouraged.

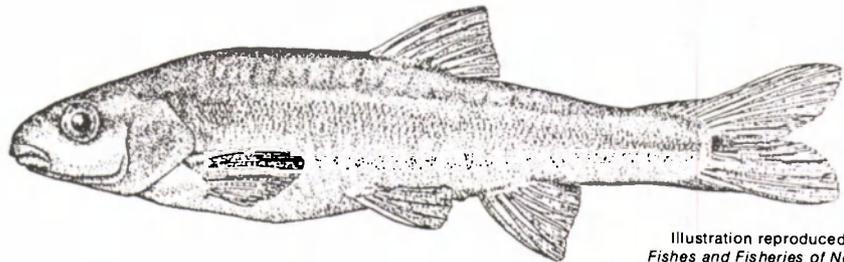


Illustration reproduced from  
*Fishes and Fisheries of Nevada*  
Courtesy of the Nevada Department  
of Wildlife

Habitat damage and the introduction of exotic fish caused a serious decline of the Moapa dace.

The recovery plan calls for protecting the springs and outflows on the other three properties by willing-seller purchase or by conservation agreement with the owners. Upon accomplishing this goal, habitat rehabilitation and stocking of Moapa dace into these waters can proceed.

Copies of the Moapa Dace Recovery Plan are available from the Fish and Wildlife Reference Service. Details on the plan and its implementation can be obtained from the Portland Regional Office (see page 2 for address).

## Everglade Kite

The Everglade kite (*Rostrhamus sociabilis plumbeus*) is a medium-sized hawk that depends for its survival on shallow, open freshwater marshes. It once occurred widely throughout the Florida peninsula, but extensive habitat destruction from wetland drainage and manipulation of water levels led to a steep decline in its range and numbers. The Everglade Kite Recovery Plan, approved by the Director on March 11, 1983, delineates the steps needed to prevent the extinction of this Endangered bird.

It is estimated that more than one-fourth of early peninsular Florida was covered with surface water for most of each year. Freshwater marsh habitat suitable for the kite and its only prey, the apple snail (*Pomacea paludosa*), was abundant. The Everglade kite was considered common until at least 1909, but wetland drainage accelerated about that time and the bird's population fell sharply by 1937. By 1945, the bird was reported to be in serious trouble. Due to water level manipulation and continued drainage, habitat has further deteriorated in quantity and quality. In the late 1950s and early 1960s, only a dozen or fewer birds were known to exist. Over the past decade, numbers have ranged annually from about 100-300 birds.

Kite populations have fluctuated significantly over recent decades in direct correlation with water levels in Lake Okeechobee and the Everglades. Shallow, openwater areas with emergent vegetation are needed because such habitat supports populations of the apple snail, a freshwater mollusk upon which the kite feeds almost exclusively. The result of this specialized feeding habit is evident in the kite's greatly decurved, thin, sharp-tipped bill which is adapted for extracting snails from their shells. Indeed, one of the bird's common names is the snail kite.

Droughts and floods have always been a part of the hydrology of the Everglades, but man has prevented the area from regular flooding by diverting waters for human use, thereby shortening the wet cycles and worsening the

effects of periodic droughts. According to the plan, "The needs of the kite can be stated in three words: reflood the Everglades." Since that is unlikely to happen, the plan addresses several alternatives that, if implemented, may prevent the kite's extinction.

The identification, restoration, and maintenance of habitat obviously are prime concerns, but the limited existing data on kite and apple snail ecology will have to be supplemented to ensure the most effective habitat management. Research on the reproductive potential of the Everglade kite has begun, and the plan calls for comparative studies with other snail kite subspecies in Central and South America in order to more closely identify the critical limiting factors at work in Florida. After enough information has been gathered, meaningful long-range population goals for the Everglade kite can be established.

Some potential limiting factors are already suspected. When trees or shrubs are not available, the kite nests in cattails, but this latter substrate makes the nests particularly vulnerable to wind or heavy rains. Since 1973, Ron Chandler, a National Audubon Society warden who patrols Lake Okeechobee, has been successfully moving jeopardized nests from cattails into artificial structures, and this technique has been reducing nest losses. Recent controlled studies have shown that few, if any, nests built in cattails would survive without "Chandler baskets." The impact of nest losses on productivity in other parts of the kite's range is identified in the plan as a topic for further research.

Another potential limiting factor for the Everglade kite is direct human disturbance during waterfowl hunting, including the effects of airboats and possible interference with pre-nesting behavior. It is known that kites have been shot by hunters, but the importance and extent of shooting and associated boating activities have not been determined. The recovery plan advocates an evaluation of these hunting-related effects in critical areas. If adverse impacts are documented, protective measures such as area closures, permits, regular patrols, and closures to night use could be applied. Any restrictions on public use would be issued only if fully warranted, and they would be carefully explained to the public.

A lesser factor, but possibly one of increasing significance in the future, is introduced plants. Water hyacinths (*Eichornia crassipes*) form dense mats on the water surface, making it impossible for the kites to hunt snails. Another exotic, the Australian punktree (*Melaleuca quinquenervia*), is rapidly invading kite habitat in south Florida, changing it from marshes to dense stands of trees.

An in-depth investigation is needed into important habitat elements and habitat carrying capacity. Some work of this nature has been carried out by the Service at Loxahatchee National Wildlife Refuge, and an expansion of this effort into a long-term study is recommended. Recent vegetation mapping and related research by the South Florida Water Management District should also be helpful. Emphasis is needed on determining minimum and maximum water levels for kites, and the ramifications of attempting to store water during wet periods for improving kite habitat during droughts should be explored.

After the habitat is identified and categorized, habitat management plans can be developed. Among the agencies likely to be involved in drawing up and implementing such plans are the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, Florida Game and Fresh Water Fish Commission, and various Florida water management districts, together with private organizations such as the National Audubon Society. Although relatively little is currently known about effective management for kites, any measure that would tend to prevent drying-out of kite habitat would be beneficial. Whenever possible, effective management for the kite should be carried out through cooperative agreements. In some cases, purchases of habitat or management easements may be necessary.

Because the kite depends solely upon the apple snail for food, it will be necessary to manage the snail in order to effectively manage kite populations. Some data on this mollusk already are available. For a number of years, the Loxahatchee refuge staff has been studying techniques to increase apple snail production as well as methods to manage foraging habitat for kites. Malacologists from Florida State University conducted a 3-year study (1975-1977) of the reproduction and ecology of the apple snail at Lake Okeechobee and Loxahatchee. But a further broad scale ecological study would provide needed information on the effects of water quality, water level periodicity, and natural enemies on the snail, and on means of achieving high levels of productivity and availability. The most crucial question is if high snail populations in managed areas could effectively offset habitat losses or provide enough food resources during droughts to reduce kite dispersal. If so, snail management might hold the key to the survival of the Everglade kite.

Copies of the Everglade Kite Recovery Plan will be available from the Fish and Wildlife Reference Service. Details on the plan and its implementation can be obtained from the Atlanta Regional Director (see page 2 for address).

## New Publications

*Ecological Studies of Six Endangered Butterflies (Lepidoptera, Lycaenidae): Island Biogeography, Patch Dynamics, and the Design of Habitat Preserves*, by Richard A. Arnold, 1983, is available. This study presents the findings of autecological investigations performed during 1977-79 on five endangered butterflies (Lycaenidae): *Callophrys mossii bayensis*, *Piebejus icarioides missionensis*, *Euphilotes enoptes smithi*, *Euphilotes baffoides allyni*, and *Aponedemia mormo langei*. Preliminary conservation and management strategies are discussed in relation to the theories of island biogeography and patch dynamics. The book can be purchased for \$14.00 (U.S./Canada), or \$16.25 (Export price) from the University of California Press, 2223 Fulton Street, Berkeley California 94720. Include \$1.50 for postage and handling. California residents add 6 or 6½% sales tax.

The proceedings of two international workshops, "The Conservation of Threatened Natural Habitats" and "Management of Large Mammals in African Conservation Areas," are available from the South African Council for Scientific and Industrial Research Comparative Scientific Programmes. To request copies, write: The Coordinator: Nature Conservation Research, CSP, CSIR, P.O. Box 395, Pretoria 0001, South Africa.

The *Liaison Conservation Directory for Endangered and Threatened Species* has been updated (May 1983) and published. This directory lists Federal, State-Territorial, private organizations,

## BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	15	18	223	3	0	22	281	19
Birds	52	14	144	3	0	0	213	40
Reptiles	8	6	55	8	4	12	98	6
Amphibians	5	0	8	3	0	0	16	3
Fishes	29	4	11	12	0	0	56	22
Snails	3	0	1	5	0	0	9	5
Clams	23	0	2	0	0	0	25	0
Crustaceans	2	0	0	1	0	0	3	1
Insects	7	0	0	4	2	0	13	3
Plants	55	2	0	9	1	2	69	9
<b>TOTAL</b>	<b>199</b>	<b>44</b>	<b>444</b>	<b>48</b>	<b>7</b>	<b>36</b>	<b>783</b>	<b>98**</b>

\* 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, and Olive ridley sea turtle.

\*\* More than one species may be covered by some plans.

Number of species currently proposed for listing: 23 animals  
17 plants

Number of Critical Habitats determined: 55  
Number of Recovery Teams appointed: 69  
Number of Recovery Plans approved: 92  
Number of Cooperative Agreements signed with States: 38 fish & wildlife  
11 plants

July 30, 1983

and independent contacts who are cooperating in the U.S. Endangered Species Program. All persons listed in the directory will receive a copy. Others may purchase the directory from the Government Printing Office, Washington, D.C. 20402 (stock number 024-010-00642-1, price is \$5.00).

The U.S. List of Endangered and

Threatened Wildlife and Plants (50 CFR 17.11 and 17.12), reprinted in the July 27, 1983, *Federal Register* (Vol. 48, No. 145, pp. 34182-34196), is now available. Limited copies are available upon request from Office of Public Affairs - Publications, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

August 1983

Vol VIII No. 8

# ENDANGERED SPECIES

## Technical Bulletin

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



POSTAGE AND FEES PAID  
US DEPARTMENT OF THE INTERIOR  
Int 423