

# ENDANGERED SPECIES

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

## Notice of Review on Invertebrate Species

by Steven M. Chambers  
Office of Endangered Species

The Service has published a notice of review that lists more than 1,000 U.S. invertebrate taxa (species or subspecies) that are, or have been, candidates for listing under the Endangered Species Act (F.R. 5/22/84). Although these species are not officially protected under the Act, this "candidate list" will be used as a planning document in the selection of those species that will be formally proposed for protective status or will be the subjects of field surveys. The notice will also inform the public of the magnitude of conservation needs for candidate invertebrates as well as give the current disposition of individual species that the Endangered Species Program has dealt with in the past. It is hoped that this will encourage research and exchanges of information that might clarify the status of species on the list. Similar lists have previously been published for plants and vertebrate animals.

Invertebrate animals are those that lack backbones. Some of the more familiar invertebrate groups are the mollusks (including snails and clams), crustaceans (including crayfish and shrimp), insects, and arachnids (including spiders). Most of the major invertebrate groups, or phyla, are comprised of far more species than the phylum Chordata, which includes all of the vertebrates (birds, mammals, and other animals with backbones).

Each genus, species, or subspecies on the review list has been given a category number of 1, 2, 3A, 3B, or 3C. These numbers are defined as follows:

- **Category 1** comprises taxa for which the Service has sufficient data on hand to support the biological appropriateness of proposing to list the species as Endangered or Threatened. Eventual publication of proposed rules on these species is anticipated.



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One of the candidate mollusks, the stirrup sheil (*Quadrula stapes*), is found in rivers within the Mobile Basin of Alabama and Mississippi, where it is threatened by extensive alteration of its riverine habitat. This mussel is a Category 1 candidate.

- **Category 2** comprises taxa for which the Service has information indicating that a proposed listing as Threatened or Endangered might be

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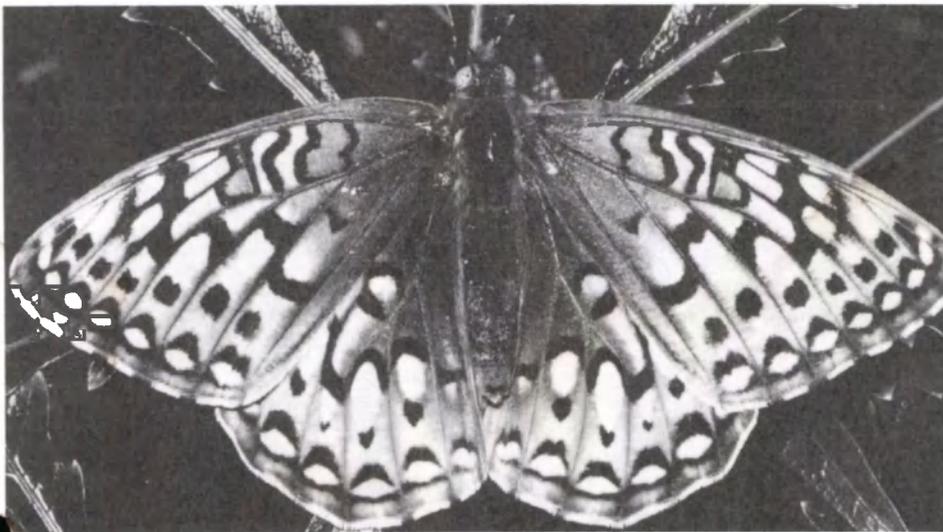


Photo by Richard A. Arnold

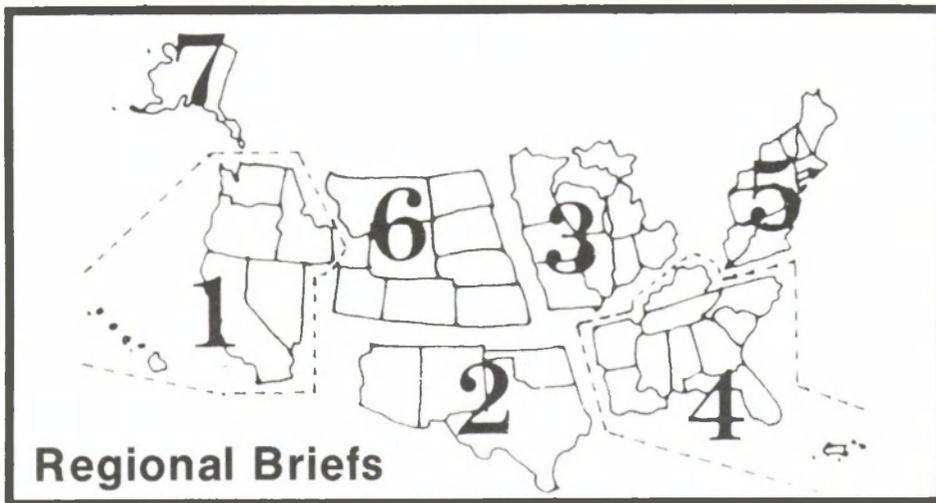
The *Callipe silverspot* butterfly (*Speyeria callippe callippe*) is one of California's insect candidates. It occurs on San Bruno Mountain in San Mateo County.

## Seven Desert Fishes Proposed for Listing

The decline of many native desert fishes of the western United States can be traced primarily to intensive use of the region's limited water resources. When the needs of wildlife are not considered during a project's early planning phases, the result can be habitat alteration or destruction. Introductions of exotic fishes and other aquatic organisms also are having adverse impacts on many native fishes and their ecosystems.

As the West became drier at the close of the Pleistocene Epoch, some 10,000 -

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## Regional Briefs

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

**Region 1**—Stream habitat on the Moapa National Wildlife Refuge in southern Nevada is being rehabilitated for the reintroduction of Moapa dace (*Moapa coriacea*). Thirty mature palm trees were uprooted along a 600-foot

stream reach and relocated off the refuge. Sunlight can now reach the stream, and the area of palm roots carpeting the stream bottom has been substantially reduced. The stream was also chemically treated to remove exotic fish species, but safeguards were taken to minimize impacts to native candidate snails and fish. All that remains is to

enlarge pool habitat and introduce suitable bottom substrate. In July, 100 Moapa dace will be taken from the Muddy River and stocked in the rehabilitated stream.

The Pacific Islands Endangered Species staff began an intensive survey of plants on the Islands of Truk, Ponape, Yap, and Kosrae in support of the Pacific Islands Forest Birds Survey.

The Service is upgrading its designation of the Ho'okele'kele Tributary in the Wailuku River system on the Island of Hawai'i from Resource Category 4 to Resource Category 2. This action is the result of a recent survey conducted within this remote stream by Andy Yuen of the Service's Honolulu, Hawai'i, Field Office. Yuen discovered spawning o'opu *alamo'o* (*Lentipes concolor*), a Category 2 fish candidate species, in the stream, which would be directly impacted by a U.S. Army Corps of Engineers hydroelectric power development project proposed for that area. The Service is recommending relocation of a proposed intake structure that plans to dewater the stream.

The cui-ui (*Chasmistes cujus*) population began its annual spawning migration up the Truckee River in April. The first evidence of this run was from the capture of 10 cui-ui in the Marble Bluff Dam's river trap. Since then, nearly 1800 of these fish have been caught. Most of the fish were transported upstream; the remainder were either released in the dam's impoundment or taken to the Pyramid Lake Indian Tribe's cui-ui hatchery. Although a large number of cui-ui have been caught in the river trap this year, it is still a highly ineffective system for transporting the fish across the dam.

**Region 2**—Twenty five acres of Knowlton cactus (*Pediocactus knowltonii*) habitat were fenced by The Nature Conservancy to keep cattle and off-road vehicles from impacting the cacti. The Nature Conservancy received this land from the public Service Company of New Mexico.

Seven Mexican wolf pups (*Canis lupus baileyi*), two males and five females, were born recently at the Rio Grande Zoo in Albuquerque, New Mexico. Three pups, two males and one female, were born to the original wild-caught female at the Wild Canid Survival and Research Center in St. Louis, Missouri, on May 24, 1984. All pups and parents are doing well. No other Mexican wolf litters are expected this year.

Norm Scott of the Service's Denver Wildlife Research Center is conducting a study on Harter's water snake (*Nerodia*

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harteri) along the Brazos and Conchos Rivers in Texas. This study will complement the preliminary study completed by Dr. Terry Marshall of Angelo State University and will, it is hoped, assist in determining the status and distribution of this candidate for listing.

**Region 4**—A meeting was held at the Florida State Museum to discuss the status of the gopher tortoise (*Gopherus polyphemus*). The attendees decided that once additional data are available from the States of Florida and Georgia, a determination will be made concerning the status of the species. Dr. Ren Lohoefer from Mississippi State University has just completed a 5-year study of the gopher tortoise in Mississippi and has considerable data to prove the endangerment of the species within that area. Dr. Lohoefer will soon forward a petition to list the western population of the gopher tortoise.

The 1984 census of the best known population of the Ozark cavefish (*Amblyopsis rosae*) found 100 individuals. This is comparable to the 1983 census of 97 cavefish. Since publication of the proposal to list this species as Threatened (F.R. 1/31/84), an additional population has been discovered in a cave in Oklahoma which lies within the known historical range of the species.

Under a Fish and Wildlife Service contract, the Florida Natural Areas Inventory conducted an aerial survey for the Endangered Chapman's rhododendron (*Rhododendron chapmanii*). Preliminary findings revealed additional plants in known populations and perhaps one new population. All of the plants appear to be located in coarse sand on the steep slopes of titi (*Cliftonia*) bogs in Gadsden County, Florida. Further survey work will be needed to locate additional plants in the remainder of Gadsden, Liberty, and Gulf Counties.

The four remaining dusky seaside sparrows, *Ammospiza maritima nigrescens*, (all males) that are in captivity at Walt Disney World's Discovery Island Zoological Park in Orlando, Florida, appear to be paired with Scott's (*A. m. peninsulae*) or Wakulla seaside sparrows (*A. m. juncicola*). One nest contains two eggs.

A total of 73 manatees (*Trichechus manatus*) are known to have died during the first four months of 1984. The causes of death have been attributed to 16 boat/barge collisions, 2 involvements with dams or locks, 8 dependent calf mortalities, and 22 from natural causes. In 25 cases, the cause of death could not be determined. A large portion of the

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## Three Plants Proposed for Listing

Three plant species were recently proposed by the Service for listing under the Endangered Species Act. Both the large-flowered fiddleneck (*Amsinckia grandiflora*) and the Last Chance townsendia (*Townsendia aprica*) were proposed for listing as Endangered (F.R. 5/8/84 and F.R. 5/29/84, respectively), and the Sacramento Mountains thistle (*Cirsium vinaceum*) was proposed as a Threatened species (F.R. 5/16/84).

### Large-flowered Fiddleneck

The large-flowered fiddleneck, an annual, has bright red-orange flowers borne in a fiddlehead-shaped inflorescence. Its green leaves and stems are densely covered with coarse, stiff hairs, and its fruits, called nutlets, have smooth and shiny surfaces.

Historically, this species was found in Alameda, Contra Costa, and San Joaquin Counties, California. Today it is known to survive at only one site covering about one-half acre in southwestern San Joaquin County. In August 1980, fewer than 50 plants were observed. Livestock grazing is believed to have been responsible for the extirpation of some previously known populations.

Very little is known about the ecology and life history of the large-flowered fiddleneck, but a number of studies have been concerned with its unusual reproductive system, which may be contributing, in part, to the rarity and endan-

germent of the species. Other factors that may threaten *Amsinckia grandiflora* and its habitat include the testing of chemical high explosives and the grass fires that may result from such tests; controlled burns performed within or near the habitat; and the encroachment of weedy competitors, especially other more aggressive fiddleneck species. The decline of the species throughout most of its historic range has been the result of conversion of habitat to agricultural uses, intensive livestock grazing, and other land-use activities that altered the natural plant communities.

The large-flowered fiddleneck has an unusual flower morphology and a highly restricted distribution, both of which contrast sharply with most other members of the genus. As a consequence, this species has been the object of a number of studies concerning the reproductive biology and evolution of the genus *Amsinckia*. If not carefully monitored and managed, the utilization of this small and restricted population for such scientific purposes could become a significant threat to the species.

The State of California lists the large-flowered fiddleneck as rare, but State law does not provide adequate protection for this species in its natural habitat. Although the State law provides for such

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Photo by Stephen Weller

The primitive reproductive system of the large-flowered fiddleneck places it at a disadvantage in competition with more aggressive exotic and native species. Habitat modification associated with agriculture and explosives testing are other factors threatening its survival.

# Seven Desert Fishes Proposed for Listing

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20,000 years ago, many western fishes became isolated in small springs and creeks where they often had to adapt to such environmental extremes as high temperatures and salinities. These adaptations to specific ecological conditions make it difficult for desert fishes to survive today's rapid modifications of their easily disturbed habitat. In recognition of their jeopardized status, the Service proposed during May to list seven more desert fishes as Threatened or Endangered species. If the proposals are made final, protection under the Endangered Species Act will be authorized for the following:

## Pecos Bluntnose Shiner

One of the two subspecies of *Notropis simus*, the Pecos bluntnose shiner (*N. s. pecosensis*), is a silvery fish that grows up to 9 cm in length. It is named for the river it inhabits, the Pecos River in New Mexico, and for its bluntly rounded snout. The other subspecies, *N. s. simus*, occurred in the Rio Grande but has not been collected since 1964 and may already be extinct.

As water use along the Pecos River increased, the Pecos bluntnose shiner decreased severely in range and numbers. Siltation and contaminated run-off from feed lot operations, along with introductions of predatory fishes, have been implicated in the decline of the subspecies and other members of the Pecos River ichthyofauna. A 1982 study by the New Mexico Department of Game and Fish reported the subspecies from only 282 km of the Pecos River in the central portion of its historical range. Even this remaining habitat is spotty and often marginal.

Diversion of the Pecos River for irrigation and water storage has reduced and, in some stretches, eliminated water in the main channel. The river's flow largely is controlled by two Federal agencies, the Bureau of Reclamation (BR) and the U.S. Army Corps of Engineers. A new impoundment proposed by the BR, Brantley Dam, could further restrict downstream water flow and inundate a spring where one population of the shiner may still occur.

Interest in the status of the Pecos bluntnose shiner had been building for some time. The Rio Grande Fishes Recovery Team, within whose jurisdiction *N. s. pecosensis* falls, became concerned about the status of this subspecies in 1978, and recommended listing it

in 1980. After completion of a status report in 1982, the New Mexico Department of Game and Fish recommended listing it as Threatened with Critical Habitat. New Mexico already lists *N. s. pecosensis* under its own legislation as Endangered; this State classification prohibits taking the fish but does not protect its habitat. It was included in the Service's December 30, 1982, Vertebrate Notice of Review as a Category 1 candidate for listing, and was one of 17 fishes in an April 12, 1983, Desert Fishes Council listing petition; the same is true for the other six fishes proposed during May 1984 for listing.

The Pecos bluntnose shiner was proposed by the Service for listing as Threatened (F.R. 5/11/84). Contained in the listing proposal is a designation of Critical Habitat for two stretches of the Pecos River totalling 86 km. These areas contain permanent flow that is not dependent on artificial releases of water, and currently support relatively abundant, self-perpetuating populations of *N. s. pecosensis*. A 15-meter riparian zone along each side was included in the Critical Habitat proposal to help control run-off and maintain water quality. No impacts from this proposal are expected on activities occurring on Federal or private lands, although it may affect future Federal water developments on the Pecos River within *N. s. pecosensis* habitat unless certain minimum flows are maintained. Any economic or other impacts of a proposed Critical Habitat designation are considered prior to a final decision.

Comments on the listing proposal are invited from all interested agencies, organizations, and individuals, and should be received by the Service's Region 2 Director by July 10, 1984. (See page 2 of the BULLETIN for the address.)

## Warner Sucker

During the Pleistocene, a large lake covered much of the Warner Basin in south-central Oregon. As surface waters receded, the Warner sucker (*Catostomus warnerensis*) became isolated in a few remaining creeks and small lakes. This species is now restricted to portions of Crump and Hart Lakes, a spillway canal north of Hart Lake, and Snyder, Honey, Twentymile, and Twelvemile Creeks. Residents of the area can recall when the Warner sucker was abundant; however, its distribution and numbers have decreased to the point that it has been proposed for listing as a Threatened species (F.R. 5/21/84).

In order to reproduce, the Warner sucker must ascend streams to spawning habitat consisting of silt-free gravel bars and moderate, clean water flows. Unfortunately, instream barriers and water diversion structures have often

prohibited the movement of suckers into their spawning habitat. During periods of low precipitation, all water leading to the sucker's spawning habitat often is diverted, thereby eliminating any chance for the fish to reproduce.

Other threats to the Warner sucker include siltation of its gravel bed spawning areas resulting from stream channelization and overgrazing. Runoff and leachates containing fertilizers and pesticides from adjacent agricultural lands put further stress on the water quality. In addition, exotic fishes that have been introduced into lakes in the Warner Basin are capable of preying on the Warner sucker and could contain new parasites and diseases.

A designation of Critical Habitat for the Warner sucker was included in the listing proposal. It consists of a total of 26 stream miles along four creeks and a spillway in Lake County, along with a 50-foot riparian zone on each side. Currently, there are no known activities involving Federal agencies that are having a direct impact on the habitat.

Comments on the listing proposal are invited and are due to the Region 1 Director, by July 20, 1984 (address on page 2).

## Desert Dace

Another relict species, the desert dace (*Eremichthys acros*), is endemic to a few thermal springs and creeks in the Soldier Meadows area of Humboldt County, Nevada, where it has survived in isolation for tens of thousands of years. This fish is the only representative of the distinctive genus *Eremichthys*. One of its unique adaptations was the evolution of prominent horny sheaths on its jaws, structures that help the fish to scrape algae and other aquatic organisms from the surface of the rock substrate.

Tolerance of warm water temperatures is another adaptation of the desert dace; fish have been found in waters as hot as 100.4°F. Where the spring headpools exceed this temperature, however, dace are restricted to the somewhat cooler outflow creeks. Many of the waters inhabited by the desert dace are on private lands, and the amount of suitable habitat has been significantly reduced by diversion of outflow from natural channels into man-made ditches for agriculture. Further, Soldier Meadows is classified as a Known Geothermal Resource Area, and ground water pumping could interfere with the thermal aquifers that feed local springs.

Reservoirs have been constructed recently on the north and south ends of the Soldier Meadows area and have been stocked with non-native fishes. If these exotics enter habitat occupied by the desert dace, they could have a harm-



Photo by John N. Rinne

desert pupfish, *Cyprinodon macularis*

ful effect through predation, competition, and introductions of exotic parasites and diseases.

Due to the reductions in desert dace numbers and habitat, this fish has been proposed by the Service for listing as a Threatened species (F.R. 5/29/84). The proposed rule contains a Critical Habitat designation that would cover thermal springs and their outflows, along with surrounding 50-foot riparian zones, within an area about 4 miles long and 1 to 2 2/3 miles wide. (See May 29, 1984, *Federal Register* for details.) Potential Federal activities that might require consultation include aquatic habitat modification, grazing permits, and leases for geothermal exploration and/or development.

Comments on the proposal to list the desert dace are invited and are due to the Region 1 Director by July 30, 1984.

### Three White River Fishes

During pluvial times, 10,000-40,000 years ago, the extensive White River system of eastern Nevada was a tributary of the Colorado River (by way of the Virgin

River). As a result of climatic changes, the White River now is dry for most of its course. A number of relict fishes, including the White River spinedace (*Lepidomeda albivallis*), White River springfish (*Crenichthys baileyi baileyi*), and Hiko White River springfish (*C. b. grandis*), survive in a few remnant springs and creeks.

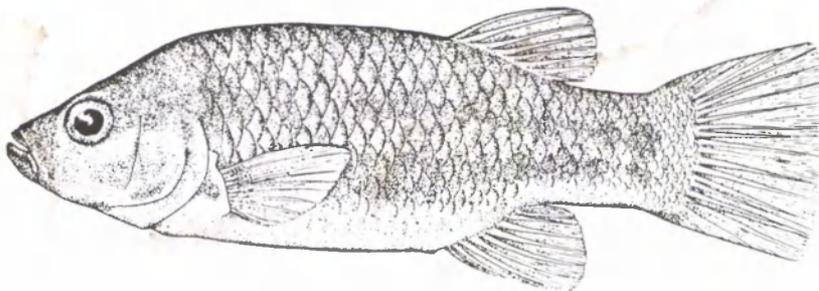
The White River spinedace is large for its genus, often attaining a length of 4-5 inches, and has distinctive coloration. Although it occurred in large numbers until 1960, this spinedace was considered rare by 1979. It has been extirpated from five localities, and survives only in Flag and Lund Town Springs. The Service has proposed listing the White River spinedace as Endangered (F.R. 5/29/84). Habitat disturbance by creek channelization and diversion of water for agricultural and residential use has been responsible for much of the decline. Introductions of exotic fishes into spinedace habitat also have been harmful, guppies (*Poecilia reticulata*) and mosquitofish (*Gambusia affinis*) in particular.

The proposed Critical Habitat for the White River spinedace includes Flag, Lund Town, and Preston Big Springs—the latter being historical habitat and a potential reintroduction site—along with their outflows and surrounding 50-foot riparian conservation zones.

Two subspecies of *Crenichthys baileyi*, the White River springfish (*C. b. baileyi*) and the Hiko White River springfish (*C. b. grandis*), were until 1967 known from three small spring areas in Pahranaagat Valley, Nevada. *C. b. baileyi* is found in Ash Springs, which consists of several small source springs feeding a nearby pool. The pool once provided extensive habitat for *C. b. baileyi*, but it has been dammed and otherwise altered for development as a swimming hole. Springfish at this site now are restricted, in reduced numbers, to the source spring area which still remains in a relatively natural condition. *C. b. baileyi* has been proposed for listing as Endangered, and Ash Springs for designation as Critical Habitat (F.R. 5/7/84).

The Hiko White River springfish, *C. b. grandis*, was included in the same proposal for listing as Endangered. Formerly, this fish occurred in two springs. It was extirpated from Hiko Spring in 1967 when exotic predators, largemouth bass (*Micropterus salmoides*), invaded the spring via an irrigation ditch from the Key Pittman Wildlife Management Area where they had been stocked. The remaining population in Crystal Springs is threatened by habitat alteration and exotic fishes. Exotic convict cichlids (*Cichlasoma nigrofasciatum*) now far outnumber the native fish in Crystal Springs. Although habitat at both springs has been damaged by channelization, water diversion, and exotic fish

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Two subspecies of the White River springfish (*Crenichthys baileyi*) are threatened by habitat degradation and exotic fishes.

Drawing by Silvio Santina  
Courtesy of the Nevada Department of Wildlife

# Interior Least Tern Proposed as Endangered

A small bird once found widely throughout the Midwestern United States, the interior least tern (*Sterna antillarum athalassos*), has been proposed by the Service for listing as an Endangered species (F.R. 5/29/84). Alteration and destruction of its riverine island nesting habitat is the primary cause of its decline.

The interior least tern is one of four recognized subspecies of a New World bird, *Sterna antillarum*, three of which inhabit the U.S. One subspecies already listed as Endangered, the California least tern (*S. a. browni*), breeds in reduced numbers along the Pacific Coast from central California to Baja California. The eastern least tern (*S. a. antillarum*) breeds along the Atlantic and Gulf Coasts and is not listed. Although the wintering area for the interior subspecies is unknown, least terns do migrate and are found along some coastal areas of South and Central America in the winter.

Historically, islands in the midwest's major river systems were periodically destroyed and created by natural erosion and deposition processes. Occasional flooding maintained some of the islands in the barren or sparsely vegetated conditions required by terns for nesting. The nests are simple unlined scrapes on the ground. Least terns are colony nesters, and destruction of their breeding island habitat can affect relatively large numbers of birds. Although the interior least tern was once common throughout its breeding range, which stretched from North Dakota to Louisiana, most of its populations have experienced significant declines. They appear to be locally common in a few areas; however, in 1980, one researcher estimated that only about 1,250 remain. This bird is already considered endangered by eight States within its range.

The construction of reservoirs along many of the midwest's large rivers for flood control, navigation, and irrigation



Photo by Luther C. Goldman

*interior least tern*

has permanently inundated many former nesting islands and so regulated natural erosion and deposition processes that new islands are not being formed. Since most of the islands that do remain are not subject to scouring by floods, vegetation has grown up and eliminated the open least tern nesting habitat. It is likely that bare sand islands and riverbanks will continue to disappear.

A number of other factors have been implicated in the decline of the interior least tern. Some of the islands and river banks along the Mississippi, Missouri, and Platte Rivers otherwise favored by terns are becoming more heavily used for recreation. Ground-nesting birds also are vulnerable to predation by the dogs, cats, and coyotes that sometimes gain access to nesting islands. Some interior least terns nest on the barren flats of saline lakes and ponds like those at Salt Plains National Wildlife Refuge in Oklahoma; however, they are threatened by the development of chloride control projects that could affect their nesting habitat and food resources (fish).

Under the Migratory Bird Treaty Act, it is already illegal to take, possess, transport, or ship interior least terns and their parts, eggs, nests, and young; however, it does not give protection to the bird's habitat. Listing the interior least tern

under the provisions of the Endangered Species Act would not only reinforce the taking prohibitions, but would provide for Federal assistance in the conservation of tern habitat. A formal designation of Critical Habitat was not included in the proposed listing rule because of the ephemeral nature of the nesting islands and the bird's apparent habit of making frequent changes of nesting colony locations. Nevertheless, if the rule is made final, the interior least tern's habitat will receive the full protection authorized under Section 7 of the Endangered Species Act. Federal agencies will be required to ensure that any actions they fund, authorize, or carry out are not likely to jeopardize the survival of the interior least tern by directly affecting the birds or adversely modifying their habitat.

Among the other benefits to the interior least tern if the proposed rule becomes final are an increased recognition of its reduced status, possible Federal funding for State cooperative conservation programs, and development of a recovery plan.

Comments on the listing proposal are welcomed from all interested agencies, organizations, and individuals, and are due to the Region 3 Endangered Species Coordinator (address on page 2) by July 30, 1984.

## Invertebrate Species

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appropriate, but for which conclusive biological data that would support listing are not available at this time.

**Categories 3A, 3B, and 3C** designate taxa that are no longer being considered by the Service for listing as Endangered or Threatened:

- **3A**—taxa for which the Service has persuasive evidence of extinction. If new evidence should indicate that a

taxon in this category is not extinct, that taxon would be placed in category 1 or 2 and could acquire high priority for listing.

- **3B**—scientific names that, on the basis of current taxonomic understanding, usually as represented in published taxonomic treatments, do not represent taxa meeting the Act's definition of "species."
- **3C**—taxa that have proven to be significantly more widespread or common than previously believed, and/or

are not subject to any identifiable threat.

Of the over 1,000 species on the notice list, 39 are in Category 1, 140 are in Category 3, and the remainder are in Category 2. Of the Category 3 species, 82 are thought to be extinct (Category 3A).

Candidate species are found throughout the United States, although a disproportionate number, mostly insects, are endemic to the State of Hawai'i. California also has a large number of endemic candidate species, which are mostly

## Utah Prairie Dog Reclassified to Threatened

The Utah prairie dog (*Cynomys parvidens*) has been reclassified under the Endangered Species Act from Endangered to Threatened (F.R. 5/29/84). This species occurs only in southern Utah where its population in the 1920's was estimated to be about 95,000 animals. Its subsequent decline was due to a number of factors, including deliberate poisoning and loss of habitat to human residential and agricultural developments. However, beginning in 1972, the downward trend of the species was halted, and since that time overall numbers have increased.

The area occupied by the prairie dogs today encompasses some 456,000 acres, and the total summer population is estimated to be in excess of 30,000 animals. The recovery has been particularly evident in the Cedar and Parowan Valleys of eastern Iron County, Utah, where the winter population increased from 1,200 adults in 1976 to 7,300 adults in 1982. Because of the improved status of the Utah prairie dog, and the fact that it no longer faces extinction in the foreseeable future, the Service feels that a Threatened classification more accurately reflects its current biological status. The reclassification was proposed in the May 13, 1983, *Federal Register* (see BULLETIN Vol. VIII No. 6). Comments received in response to the proposal were generally supportive.

In addition to the reclassification of the Utah prairie dog, the Service published a special regulation that would allow a maximum of 5,000 animals of this species to be taken annually between June 1 and December 31 under the supervision of Utah State officials in the Cedar and Parowan Valleys. The State has already tried to reduce population pressures in these valleys by live-trapping and transplanting individuals elsewhere; these efforts, however, have not been successful in relieving the problem. The reason for the problem is that after the prairie dogs give birth to their young in the early spring, populations in the Cedar and Parowan Valleys swell to well over 20,000 animals. This great annual increment strains the carrying capacity of the habitat and results in conflicts with local ranching and farming interests. It is estimated that the prairie dogs do over \$1.5 million damage annually to agriculture in the area. Their high density also makes these animals vulnerable to outbreaks of disease like sylvatic plague that has occurred among overcrowded rodents elsewhere.

*continued on page 3*

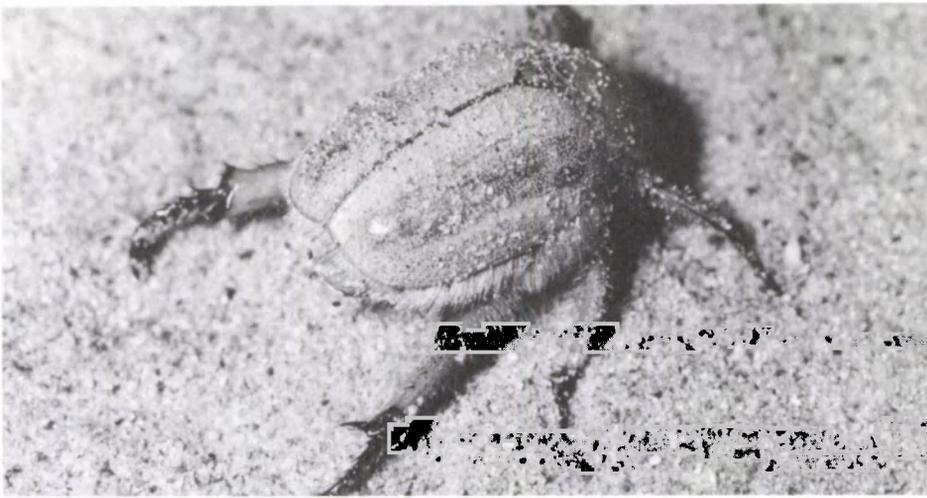


Photo by A. Hardy

*The habitat of another candidate, the Andrews' dune scarab beetle (*Pseudocotalpa andrewsi*), in southern California is subject to damage by off-road vehicle use, which disturbs the dunes and reduces the availability of the beetle's detrital food supply.*

insects and land snails. Most candidates are found in only a single State; however, some are rare over ranges that include several States, particularly those candidates that occur in the eastern half of the continental U.S.

The greatest numbers of candidate species are insects, and within that group the beetles are the most highly represented. This is consistent with our current knowledge of the insects and beetles as by far the most species-rich of all animal classes and orders, respectively. Most of the Category 1 species are snails, due mainly to the increased knowledge of these species resulting from surveys funded by the Service through Sections 4 and 6 of the Act.

Most of the extinct species (Category 3A) on the review list are clams, butterflies, moths, and Hawaiian wild bees. Several moth species dependent on the American chestnut tree for food have disappeared as their host plant suc-

cumbed to the introduced chestnut blight. Many other moth species, and much of the large genus of yellow-faced wild bees (*Nesoprosopis*) in Hawai'i, have failed to survive the introduction of bird predators, competing exotic insects, and competitors of native host plants in that previously isolated habitat. The high extinction rates shown for clams and butterflies may be partially a result of those groups being better known geographically than other groups. Many endemic butterflies occur in very small populations that are subject to extinction. For the clams, pollution and the loss of large flowing river habitat to impoundments have been the major causes of extinction.

The invertebrate review list was assembled by the Washington Endangered Species Office staff. Service regional and field offices then reviewed

*continued on page 11*



Photo by W.P. Mull

*Hawai'i has more candidates in the invertebrate notice than any other State. One of these candidates, the Kaua'i cave amphipod (*Spelaeorchestia koloana*) or 'uku noho, is a small crustacean that is vulnerable due to its restricted distribution.*

## Two Arizona Plants Listed as Endangered

Two species of plants found only in the State of Arizona, the Arizona agave (*Agave arizonica*) and the Arizona cliffrose (*Cowania subintegra*), have been listed by the Service as Endangered, and now will receive protection under the Endangered Species Act.

### Arizona Agave

Fewer than 100 plants of this species are known to exist in only 13 populations. The Arizona agave is an attractive succulent, with leaves growing up from the base in a somewhat flattened globular form, and its pale yellow, jar shaped flowers are borne on a stalk that can reach up to 3.6 meters in height. Due to its reduced numbers and range, its slow reproduction rate, and the continuing threats to its survival, the Arizona agave was proposed for listing as an Endangered species on May 20, 1983 (see BULLETIN Vol. VIII No. 6). This plant is endemic to a very small area of the New River Mountains in the Tonto National Forest, central Arizona.

Land use in this area consists of cattle grazing under U.S. Forest Service (USFS) permit. Cattle and deer browse the flowering stalks of agaves, and may play a role in the poor reproductive success of this species by eating the flower stalks before they mature and distribute seeds. Cattle grazing also may be having adverse impacts on the habitat in general. Taking of this plant for cultivation in private rock gardens and for commercial trade is another threat to its survival. Although taking was already restricted by State law and USFS regulations, these measures have been difficult to enforce, and the Endangered listing (F.R. 5/18/84) gives additional protection.

### Arizona Cliffrose

The Arizona cliffrose is an evergreen shrub reaching 75 cm in height, with small white or yellow flowers. Its leaves, twigs, and flowers are covered with dense, short, white hairs. This distinctive species is known from only two small populations totalling about 700 plants. It was proposed on July 15, 1983, for listing as Endangered (see BULLETIN Vol. VIII No. 8), and the rule became final on May 29, 1984.

The first population occurs on about 600 acres in the Burro Creek area of Mohave County, and the second is scattered over approximately 100 acres in Graham County. Both are located on lands administered by the Federal Government (Bureau of Land Management and Bureau of Indian Affairs) and the Arizona Department of Transportation. The Burro Creek population is heavily browsed by cattle, mule deer, and feral burros. Mining is another threat to the species' survival; currently, there are 114 BLM mining claims within a mile radius of the Burro Creek plants. Areas within the population have been bladed, apparently to expose subsurface formations for mineral explorations. Gas pipelines, electricity transmission lines, and a road also pass through the area, and maintenance procedures involve occasional blading. A portion of the Graham County population occurs on a highway right-of-way and could be affected by any road widening or herbicide spraying; however, there are currently no plans to widen the highway, and the Arizona Department of Transportation has agreed to notify the Service if any of its future activities could adversely impact the population.

As Endangered species, both the Arizona agave and the Arizona cliffrose will receive protection under the Endangered Species Act. The listings give recognition to the precarious status of these plants, require the development of plans for their recovery, and make possible Federal aid to cooperative State conservation activities. Further, under Section 9 of the Act, it is illegal to remove and reduce to possession Endangered plants from areas under Federal jurisdiction. This measure now applies to the Arizona agave which occurs only on USFS lands, and to the Arizona cliffrose which is found on BLM and BIA lands. Section 9 also prohibits interstate or international trafficking in Endangered plants. Permits for otherwise prohibited activities involving Endangered species are available, under certain circumstances, for approved scientific or conservation purposes.

Designations of Critical Habitat were not included in the final rules because publishing the required maps and habitat descriptions would make both plants vulnerable to vandalism and illegal taking. The agave, in particular, is subject to overcollection as an ornamental plant. Nevertheless, these plants will receive the full protection offered under Section 7 of the Act. Federal agencies are required to ensure that any action they fund, authorize, or carry out are not likely to jeopardize the continued existence of the species by directly affecting them or adversely modifying their habitat. USFS regulations on the protection of listed species like the Arizona agave are compatible with the purposes of the Act, and the BLM is planning for the Arizona cliffrose in its management documents.

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## Utah Prairie Dog

*continued from page 7*

In the past, ranchers and farmers poisoned the prairie dogs in great numbers to control damage, but since the species has been listed as Endangered such activities have been illegal. It is now feared that prairie dog numbers have increased so greatly in the Cedar and Parowan Valleys that local interests may feel forced to use illegal means to obtain relief. Under the new regulation, the State of Utah will supervise control activities that will reduce the number of prairie dogs by up to 5,000 animals annually, by which it hopes to relieve pressures on the ranchers to take illegal

action. The State will not allow poison to be used in the control program, and most of the animals taken will be juveniles, the majority of which would die anyway by the end of the year. (The natural die-off occurs in the late fall and winter when most of the agricultural damage has already been done.) State officials assure the Service that if legal control is not permitted, they would not be able to prevent illegal poisoning of large numbers of animals. If that were to happen, far more than the 5,000 to be taken annually under the new regulation would undoubtedly be illegally poisoned, and the species might again become in danger of extinction. Thus, the new regulation is a conservation oriented move that is essential to relieve population pressures in the Cedar and

Parowan Valleys that cannot be relieved in any other way.

The State of Utah will continue to monitor and census Utah prairie dog populations, and will report numbers taken in the Cedar and Parowan Valleys at regular intervals to the Service. If at any time the Service receives substantive information that the removal of 5,000 animals annually from these valleys is proving detrimental to the species, it may immediately halt further take. Aside from the taking authorized with the special regulation, all other protective measures previously covering the Utah prairie dog and its habitat will remain in effect.

## Desert Fishes

continued from page 5

introductions, they could be rehabilitated as part of a recovery effort for the subspecies. These springs were proposed for designation as Critical Habitat.

Comments on the proposals to list the White River spinedace (due July 3, 1984) and springfishes (due July 6, 1984) are invited and should be addressed to the Region 1 Director (address on page 2).

### Desert Pupfish

Another species that has adapted to extreme environmental conditions is the desert pupfish (*Cyprinodon macularius*). This fish has been known to survive water temperatures greater than 110°F, oxygen levels as low as 0.1 parts per million, and salinities nearly twice that of seawater. Unfortunately, as hardy as the desert pupfish is, it cannot tolerate the effects of exotic fishes or heavy damage to its habitat.

Historically, this species was common in parts of the lower Colorado River drainage, particularly in springs, marshes, tributary streams, and slow-moving stretches of four large rivers. Recent surveys, however, show that the desert pupfish has been drastically reduced in numbers and distribution. It therefore has been proposed for listing as Endangered (F.R. 5/16/84).

The distribution of the desert pupfish has been reduced to short stretches of Salt Creek, San Felipe Creek and the associated San Sebastian Marsh, and a few areas along the Salton Sea, all in southern California; Quitobaquito Spring in Organ Pipe Cactus National Monument in southern Arizona; and the Sonoyta River drainage and Santa Clara Slough in northern Sonora, Mexico.

Populations in most of these remaining areas have been reduced to such low levels that their prospects for long-term survival are considered poor. Intensive development and use of the limited surface and ground water resources for irrigation has seriously damaged much of the habitat. Geothermal drilling is another threat; Federal lands around Salt Creek already have been leased for geothermal exploration, and lease applications for tracts near San Sebastian Marsh have been filed with the Bureau of Land Management.

Several exotic fishes known to prey on and compete with the desert pupfish have become established in the Salton Sea and other parts of the species' historical range. A brackish water snail of the Thiaridae family recently was introduced on the northern periphery of the Salton Sea where it could compete with desert pupfish for food, consume pupfish eggs, and transmit parasites. Desert pupfish in the Salton Sea area already have been infested with a parasitic copepod (anchor worm) of the Lernaeidae family, accidentally introduced with an exotic fish. There is even the potential that an exotic aquatic weed, *Hydrilla verticillata*, could invade pupfish habitat from the nearby All American Canal, where it was recently introduced, and control methods (including chemical treatments) could have an impact on the pupfish. Water quality in some parts of the pupfish range already has been degraded by pesticides used on nearby farmlands.

The proposed Critical Habitat for the desert pupfish includes about one-half acre of aquatic habitat at Quitobaquito Spring, approximately 11 miles of stream channel along San Felipe Creek and two of its tributaries, and 100-foot riparian buffer zones. Pupfish popula-

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## Petition Findings on Two Reptiles

The Service has published (F.R. 5/18/84) its initial findings on the substantiality of information presented in petitions to delist the yacare caiman (*Caiman crocodylus yacare*) and to list Harter's water snake (*Nerodia harteri*) under the provisions of the Endangered Species Act.

The yacare has been listed since 1970 as Endangered, and this crocodylian is native to parts of Argentina, Brazil, Bolivia, and Paraguay. A petition to delist the yacare was received on December 27, 1983, from Mr. Steven H. Mosenson, who submitted it on behalf of the Reptile Skin Industry Trade Association. The Service carefully reviewed the petition and the documents submitted with it in support of the petitioned action, and concluded that they do not present credible, substantial biological or commercial data to indicate that a delisting may be warranted. In order to clarify the yacare's status in the wild, the Service is cooperating with the Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in developing a 2-year survey to be conducted under the auspices of CITES, the International Union for the Conservation of Nature and Natural Resources—Crocodyle Specialist Group, and the Governments of Brazil, Bolivia, and Paraguay. If the survey yields data indicating that the status of the yacare is more secure than now believed, it could be proposed for reclassification or delisting.

Harter's water snake is known only from central Texas. A petition to list both subspecies of this snake as Threatened with Critical Habitat was received February 14, 1984, from Mr. Ted L. Brown of the New Mexico Herpetological Society. Mr. Brown based his petition on two status reports that had been submitted to the Service under contract by Dr. Terry Maxwell of Angelo State University. After examining the petition, the Service found that it does contain substantial biological information to indicate that a listing under the Act may be warranted. The required status review on Harter's water snake actually began earlier with the Service's December 30, 1982, notice of review on certain vertebrate species. Any data on this snake will be welcomed, particularly information on taxonomy, distribution, threats to its survival, and any recommended Critical Habitat. Information should be mailed to the Associate Director-Federal Assistance, U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240. In accordance with the Act, the Service must decide by February 28, 1985, if the species should be proposed for listing.



Photo by C. Kenneth Dodd, Jr.

Desert pupfish habitat in Quitobaquito Spring (Organ Pipe Cactus National Monument, Arizona) is jeopardized by the airborne drift of chemicals that are sprayed on agricultural lands in nearby Mexico.

## Three Plants

continued from page 3

measures as research and land acquisition, provisions of the Endangered Species Act would offer the additional protection needed for this plant and its habitat.

Proposed Critical Habitat for the large-flowered fiddleneck is in San Joaquin County, California. With a steep west- and south-facing slope in a light-textured but stable soil, the proposed area will, at least, satisfy the fiddleneck's short-term physiological needs essential to its conservation. The area proposed exceeds the current range of the plant and contains places suitable for expansion or relocation which will increase the plant's chances for recovery. One Federal action that could have an effect on the Critical Habitat is Department of Energy funding of certain research, including the testing of explosives, at the University of California's Lawrence Livermore Laboratory.

Comments on the proposal to list the fiddleneck as Endangered should be submitted by July 9, 1984, to the Region 1 Director. (See page 2 of the BULLETIN for the address.)

### Last Chance Townsendia

The Last Chance townsendia, a herbaceous perennial that grows less than one inch tall, is a member of the sunflower family, Asteraceae. Stems of this plant grow from an underground base and branch to form a dense mat or tuft low to the ground. The flower heads are about 3/4 of an inch wide with almost no stalk and have distinctive yellow to golden rays. The golden ray florets make this plant unusual in its genus; ray florets of the other known taxa are white, blue, red, or pale yellow.

*Townsendia aprica* has never been abundant. At present, there are only three known populations within a 12-mile radius. Most of the plants are on public lands administered by the Bureau of Land Management (BLM) in Sevier and Emery Counties, Utah. The species occurs on heavy clay soils partly underlain by coal, which makes it subject to disturbance by mining activities. Populations are threatened also by off-road vehicles, oil and gas exploration, and cattle grazing and trampling. Because only 220 individuals are known to exist, this species appears highly vulnerable to ecological and genetic fluctuations.

The Last Chance townsendia is not currently protected by any Federal or State laws or regulations. Although populations exist on BLM lands, the Bureau is not legally obligated to regulate activities so as to provide for the conservation of the species.

The Service finds that designation of Critical Habitat is not prudent for the

Last Chance townsendia at this time. Listing alone highlights the rarity of a plant and can attract the attention of vandals. Publication of Critical Habitat descriptions and maps, together with the publicity of listing, would single out the location of each population and make this species even more vulnerable and increase enforcement problems.

Comments on this proposal should be received by July 30, 1984, at the office of the Region 6 Director (address on page 2).

### Sacramento Mountains Thistle

The Sacramento Mountains thistle, a perennial species that grows 1-2 meters tall, has purple, highly branched stems, and long leaves that have deep, narrow, pointed lobes. Many purple flower heads form on each plant, mostly during July and August. Most of the populations occur on steep calcium carbonate deposits adjacent to flowing springs.

*Cirsium vinaceum* is known only from the Sacramento Mountains of south-central New Mexico. Fourteen populations of the thistle are presently known, with a combined total of 2,000-3,000 plants. Most of the populations are located in the Lincoln National Forest, several are on private lands, and one is on the Mescalero Indian Reservation. The proposal to list the Sacramento Mountains thistle as a Threatened species is due to habitat destruction by livestock and water development, competition with introduced plant species, road construction, logging, and recreational activities.

Since most populations of the thistle occur on Federal land, the Service has determined that the species would benefit from a designation of Critical Habitat. The proposed Critical Habitat area includes Lincoln National Forest lands, Mescalero Apache Indian lands, and private lands encompassing considerably more area than is currently occupied by *Cirsium vinaceum*. The Service believes that this entire area is essential to the conservation of the species because it is large enough to allow for expansion of the plant as a result of recovery efforts.

Comments on the proposal to list *Cirsium vinaceum* are due by July 16, 1984, to the Service's Region 2 Director (address on page 2).

### Effects of the Listings if Approved

If the proposals are made final, all three plants will receive protection under the Endangered Species Act of 1973, as amended. Conservation measures provided to species listed as Endangered or Threatened under the Act include recognition, recovery actions, requirements for Federal pro-

tection, and prohibitions against certain practices.

Because these species have been proposed for listing, Federal agencies are required under Section 7 to confer (a non-binding procedure) with the Fish and Wildlife Service on any action they fund, authorize, or carry out that is likely to jeopardize the survival of the proposed species or adversely modify their habitats. If the proposed listings are made final, this protection against adverse Federal actions will be strengthened.

Interstate and international trafficking in these plants will be prohibited with certain exceptions if they are listed. In addition, the Act makes it unlawful to remove and reduce to possession Endangered plants from lands under Federal jurisdiction, and this protection will be extended to Threatened plants once implementing regulations are completed.

## Regional Briefs

continued from page 3

deaths attributed to natural causes, and probably an equally large portion of the deaths where the causes could not be determined, was the result of extremely cold weather during the last week of December 1983. Coincidentally, 73 manatees were known to have died also in the first four months of 1982, a year that established a record high mortality of 123 animals. Most of those deaths were attributed to a red tide outbreak in the Ft. Myers, Florida, area.

Preliminary results have been compiled from comments received concerning Dr. Jane Packard's "Proposed Research/Management Plan for Crystal River Manatees." The plan was written by Dr. Packard under a contract funded by the Fish and Wildlife Service and the Marine Mammal Commission to serve as a prototype for subsequent research/management plans developed for other manatee populations located around the State of Florida. The plan includes a summary with pictures and illustrations, sections on goals and objectives, management alternatives and recommendations, and background information and research data used to formulate the alternatives and recommendations. Copies of the summary are available at the Office of Endangered Species, Jacksonville Field Station, 2747 Art Museum Drive, Jacksonville, Florida 32207.

**Region 5**—Roger Hogan of the Region 5 Endangered Species Office and Judy Jacobs of the Annapolis, Maryland, Field Office inspected habitat of the Dismal Swamp southeastern shrew (*Sorex longirostris fisheri*) at the Great Dismal Swamp National Wildlife Refuge in Vir-

ginia. This inspection was conducted as a final review prior to submitting a listing proposal for the species.

Staff members from the Region 5 and Washington Endangered Species Offices attended the annual meeting of the Virginia Round-leaf Birch (*Betula uber*) Committee at Jefferson National Forest. Discussions centered around the current status of recovery efforts undertaken for the tree which include seedling cultivation at Virginia Polytechnic Institute green-house facilities and the establishment of birch populations in the Jefferson National Forest. Some discussion was focused also on the loss of approximately 24 2-year-old seedlings due to apparent vandalism. Since the seedlings were located on private property, the State of Virginia is investigating.

**Region 7**—The Alaska Endangered species staff and Assistant Regional Director, Jon Nelson, met with representatives from the Bureau of Land Management (BLM) and Alyeska Pipeline Service Company to discuss Alyeska's proposal to conduct oil spill drills, routine surveillance, and general maintenance work along the Trans-Alaska Pipeline. Alyeska is seeking liberalization of protection measures established by BLM and the Fish and Wildlife Service to protect nesting Arctic peregrine falcons (*Falco peregrinus tundrius*). Of particular concern is Alyeska's proposal to use helicopters for repeated, low-level surveillance flights along the pipeline corridor which traverses nesting habitat of at least four pairs of peregrines. Alyeska has pointed out that, without careful monitoring of the pipe-

line, a leak could go undetected and cause considerable environmental damage.

A compromise was reached whereby Alyeska could conduct its activities as proposed, if it provides an experienced raptor biologist to observe and record the behavior of peregrine falcons present. The biologist's findings would then be used to further define the level of protection needed by peregrines at these specific nest sites.

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## Invertebrate Species

*continued from page 7*

the draft list and suggested additions or deletions of species, as well as alternative category designations. All invertebrate species that have been subjects of previous Service notices and proposed rules published in the *Federal Register*, or have been the subject of a petition to classify them as Endangered or Threatened, have been placed on the review list. Other species on the review list have been subjects of Service-conducted or funded literature and field surveys, or were taken from State "endangered" lists or lists produced by endangered species symposia conducted by professional societies and States.

The Service considers this review list a working document. Category numbers of species will be revised on the basis of appropriate new information gathered by, or submitted to, the Service. The Service is accordingly soliciting any information that might change the category number of any of these species. Such information and other comments may be submitted to the Washington

Office or any of the Service's regional or field endangered species offices.

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## Desert Fishes

*continued from page 9*

tions in these areas appear to have the best chances for survival. Potential Federal actions that could affect the pupfish and its habitat include, but are not limited to, issuance of permits for mineral and geothermal exploration, grazing, and construction of irrigation systems; stream channelization of San Felipe Creek for flood control; and development for recreation.

Comments on the proposal to list the desert pupfish as Endangered are invited and are due to the Region 1 Director by July 16, 1984.

If the above proposals are made final, the seven desert fishes will be listed as Threatened or Endangered species and will benefit from the protection authorized under the Endangered Species Act. Increased status recognition, possible funding of cooperative State conservation programs, the development of recovery plans, protection from adverse Federal activities, and prohibitions against certain practices that might harm listed species are among the conservation measures available.

Regulations implementing the Act, 50 CFR 17.21 and 17.31, describe a series of prohibitions and exceptions that generally apply to all Threatened or Endangered wildlife. These prohibitions, in part, make it illegal to take, possess, sell,

*continued on page 12*

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## CITES News

*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, ensuring 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.*

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## Call for CITES Information

Two researchers with the International Union for the Conservation of Nature and Natural Resources (IUCN), Laura H. Kosloff and Mark C. Trexler, are analyzing CITES implementation and would appreciate receiving:

- copies of or citations to any material discussing CITES issues, either in general or with respect to a particular country;
- information on national legislation implementing CITES in individual countries, as well as information regarding its strengths and weaknesses in implementing CITES; and
- personal and organizational views on CITES in general, its trends, the functioning of the Secretariat, its imple-

mentation and regulations, and its scope and goals.

Information and views from all sides of the various issues are crucial to the ultimate usefulness of this research and would be greatly appreciated. Confidentiality of information can be maintained. Please send information and responses to: Mark C. Trexler, Research Associate, International Union for Conservation of Nature, Avenue du Mont-Blanc, 1196 Gland, Switzerland.

# Desert Fishes

continued from page 11

or engage in interstate or international trafficking in listed organisms except under permit. They will apply to all of the fishes proposed for listing as Endangered species; however, Section 4(d) of the Act authorizes more flexible regulations for the conservation of Threatened species. Since the fishes proposed for listing as Threatened—the Pecos bluntnose shiner, the Warner sucker, and the desert dace—are jeopardized primarily by habitat disturbance rather than direct taking, special rules will allow the take of these fishes without a Federal permit *if* a State collection permit is obtained and all State wildlife regulations are satisfied. Such taking must be for scientific, propagation, educational, and other conservation purposes consistent with the Endangered Species Act; take for any purpose not enumerated in the special rules will be prohibited. Incidental catch of these fishes by licensed anglers will not be subject to prosecution if the fish are returned to the water.

The seven desert fishes will also benefit from Section 7 of the Act, which requires Federal agencies to ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the survival of Threatened or Endangered species or to adversely modify their Critical Habitats. Under Section 7, this protection applies also to those species for whom Critical Habitat has not been designated.

## Ferret Workshop

The University of Wyoming, U.S. Fish and Wildlife Service, and Wyoming Game and Fish Department are cooperating in sponsoring a Black-Footed Ferret Workshop, to be held at the University of Wyoming campus on September 18-19, 1984. Biologists will

## 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	19	233	3	0	22	292	21
Birds	52	14	144	3	0	0	213	50
Reptiles	8	6	60	8	4	13	99	10
Amphibians	5	0	8	3	0	0	16	4
Fishes	30	3	11	12	1	0	57	30
Snails	3	0	1	5	0	0	9	6
Clams	22	0	2	0	0	0	24	1
Crustaceans	3	0	0	1	0	0	4	1
Insects	7	0	0	4	2	0	13	5
Plants	60	3	0	9	2	2	76	23
<b>TOTAL</b>	<b>205</b>	<b>45</b>	<b>459</b>	<b>48</b>	<b>9</b>	<b>37</b>	<b>803</b>	<b>151**</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 Recovery Plans approved: 129

Number of species currently proposed for listing: 34 animals  
30 plants

Number of Species with Critical Habitats determined: 59

Number of Cooperative Agreements signed with States: 40 fish & wildlife  
13 plants

May 31, 1984

discuss recent management and research of ferrets in northwestern Wyoming, and panel discussions will be conducted by authorities in the field to discuss future needs. The opening remarks will be made by Dr. Donald Dexter, Director of the Wyoming Game and Fish Department. Invited scientists include members of the Black-Footed Ferret Advisory Team, the Black-Footed Recovery Team, Wyoming Game and Fish Department, university researchers, private researchers, and others.

People interested in attending the workshop may write Conferences and Institutes, P.O. Box 3972, University Sta-

tion, Laramie, Wyoming 82071 for registration information. There is a \$20 registration fee to cover costs. Participants are responsible for their own lodging and meals, both of which are easily obtained in Laramie. The workshop proceedings will be printed by the Wyoming Game and Fish Department.

June 1984

Vol. IX No. 6

# ENDANGERED SPECIES

## Technical Bulletin

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

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