



# ENDANGERED SPECIES TECHNICAL BULLETIN

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

## Maine Project

### Plan Advanced for Resolving Furbish Lousewort Conflict

The Service has recommended a conservation program for the Endangered Furbish lousewort (*Pedicularis furbishiae*) that, if followed by the U.S. Army Corps of Engineers, could permit construction of the proposed Dickey-Lincoln School Lakes power project in Maine without jeopardizing the plant's continued existence.

The proposed program, outlined in a biological opinion transmitted to the Corps of Engineers on June 27, is the product of 18 months of studies and consultation between the two agencies. "This was one of the most complex consultations yet," commented Lynn Greenwalt, Director of the Service, "but it was much less difficult than it could have been because of the cooperative attitude of the Corps."

Consultations were initiated following the rediscovery of the lousewort, a member of the snapdragon family long thought to be extinct until it was identified during a 1976 environmental impact study of the power project for the Corps.

A total of 879 specimens were found at 21 stations along 160 miles of the main stem of the St. John River from the project site in Aroostook County, Maine, downstream to the mouth of the Aroostook River in New Brunswick, Canada. Most of the plants are situated in a narrow zone just above the river itself, usually on shaded slopes facing a northerly direction.

When the Service listed the Furbish lousewort as Endangered on April 26, 1978 (see the May 1978 BULLETIN), it cited the proposed power project as well as refuse dumping, natural landslides, construction, and lumbering as endangering factors.

The Dickey-Lincoln School Lakes  
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## Recovery Charted For Four Species

### Habitat Cited For Hawaiian Stilt, Coot, and Gallinule

The Service has approved a recovery plan calling for the acquisition and maintenance of scarce wetlands habitat in the Hawaiian Islands to restore the populations of three Endangered waterbirds. The plan covers the Hawaiian stilt or aeo (*Himantopus mexicanus knudseni*), the Hawaiian coot or alae keokeo (*Fulica americana alai*), and the Hawaiian gallinule or alae ula (*Gallinula chloropus sandvicensis*).

The recovery team, headed by Ronald L. Walker of the Hawaii Division of Fish and Game, has established the following primary objective to be carried out by the plan: "To provide and maintain populations of at least 2,000 Hawaiian stilts, 2,000 Hawaiian coots, and 2,000 Hawaiian gallinules in, at a minimum, the habitats and island distribution existing in 1976 and to remove these Endangered species from the Endangered and Threatened status lists."

If the recommendations detailed in the plan are carried out, the recovery team said, attainment of the objective appears biologically feasible. The team estimates the current statewide population of the stilt at 1,500 birds, the coot at 2,500 birds, and the gallinule at a total of 750 birds. But owing to the secretive nature of the gallinule, which lives in heavily vegetated areas of Kauai and Oahu, the team said the population estimate for the bird was made on a "best judgment" basis rather than an actual count.

### Habitat Competition

In the early days of the islands, before the arrival of Europeans in the 18th century, the three subspecies of waterbirds appear to have flourished because wetlands were far more plentiful than today. The early Hawaiians

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### Black-Footed Ferret Tied To Prairie Dog Management

A recovery plan that sets a primary objective of maintaining at least one wild, self-sustaining population of the extremely rare Endangered black-footed ferret (*Mustela nigripes*) in each of the 12 States covering its former range has been approved by the FWS.

However, the recovery team, headed by Raymond L. Linder of the South Dakota Cooperative Wildlife Research Unit, acknowledged that this objective was difficult to achieve. "Many research and management activities cannot be carried out simply because the black-footed ferret cannot be found for work or study," the team said.

Accordingly, the recovery plan emphasizes prairie dog management, because these animals can be managed and now provide habitat essential to the ferret. "Although some black-footed ferrets have been held at the Patuxent Wildlife Research Center," the team said, "successful propagation techniques have not been devel-

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Hawaiian stilt

photo by David L. Olsen

## Regional Briefs

Endangered Species Program regional staffs have reported on the following recent activities in their areas:

**Region 1.** A two-year search has turned up a pair of Marianas mallards (*Anas oustaleti*), a species once feared extinct. The male and female were sighted twice at two different locations on Saipan's Lake Susupe. Service officials believe more of the mallards may be present, and attempts will be made to capture several birds for an artificial breeding project.

Two pairs of the Hawaiian crow or alala (*Corvus tropicus*) are in a captive breeding program at the State's Paka-kaloa Propagation Station. One pair recently produced an egg—the first known from an alala in captivity. The station's alala and Hawaiian goose or nene (*Branta sandvicensis*) projects are assisted by Service contract funds.

A total of 140,000 larval cui-ui (*Chasmistes cujus*) have been released into

the lower Truckee River, the fish's historical spawning waters, by the Reno Fisheries Office. Lowering of Pyramid Lake's water level by irrigation diversion has prevented the cui-ui from migrating from the lake to the lower Truckee to spawn.

**Region 2.** Dr. W. L. Minckley and Dr. Robert R. Miller are conducting a status and distribution survey of Rio Yaqui fishes in Mexico under a contract awarded to Arizona State University. So far the survey has found the Yaqui stoneroller (*Camptostoma ornatum pricei*) to be widespread and the Yaqui chub (*Gila purpurea*) to be in some difficulty. Data are still not complete for the Yaqui shiner (*Notropis formosus burnsi*), Yaqui catfish (*Ictalurus pricei*), Yaqui topminnow (*Poeciliopsis occidentalis sonoriensis*), and Yaqui sucker (*Catostomus bernardini*).

The Service also is considering protection for some of the Yaqui fishes. The six Yaqui species at one time made their way upstream into the

United States, but only three species remain in two small Arizona springs.

A litter of five Mexican wolves (*Canis lupus baileyi*) was produced this spring at the Sonora Desert Museum, Tucson, Arizona. Four of the pups survived.

**Region 3.** Two male Kirtland's warblers were observed in Wisconsin. Only five previous sightings have been recorded. One of the birds had been banded in 1972 in Crawford County, Michigan.

**Region 4.** The Red Wolf Recovery Team has surveyed Ossabaw Island, Georgia, as a possible new translocation site for the wolf. Other potential sites also are being evaluated.

**Region 5.** University of New Hampshire researchers have received a contract to determine if the Furbish lousewort (*Pedicularis furbishiae*) can be artificially propagated through cell and tissue cultures (or cloning). Such techniques have been successful with orchids and some commercially important trees. It will take six months to learn if lousewort propagation is feasible. If it is, the project also calls for transplants to the wild.

**Alaska Area.** Members of the Aleutian Canada Goose Recovery Team and Service personnel toured the Aleutian Islands National Wildlife Refuge in July and visited the Agattu Island captive population of *Branta canadensis leucopareia*, which is slowly being released to the wild. Presently, 139 geese are on the island. It is hoped they will become a nesting flock on Agattu and winter in southern California.

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### Opler Named Chief of OES Biological Support Branch

Dr. Paul A. Opler, 39, has been appointed chief of the Office of Endangered Species' Branch of Biological Support. He had been serving as acting chief of the branch since 1977.

Opler joined the Office of Endangered Species in 1974 as staff entomologist. He holds a Ph.D. in entomology from the University of California at Berkeley and is active in several scientific organizations, including the Entomological Society of America and the Association for Tropical Biology.

### Correction

The West Indian monk seal was incorrectly identified on page 7 of the June issue of the BULLETIN. It should have been listed as *Monachus tropicalis*, instead of *M. schauinslandi*.

## Conservation Needs of Sea Turtles Come Under Review

A comprehensive plan for the recovery and management of sea turtles was reviewed during a June 26-27 meeting at Tampa, Florida, co-hosted by the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS), which share conservation responsibilities for the turtles.

The plan was drafted by the NMFS Southeast Regional Office and is focused primarily on improving recovery planning for the western Atlantic populations of sea turtles, including those found throughout the Caribbean. During the discussion sessions, participants generally agreed that too little is known about the true status, life history, and needs of marine turtles, which spend most of their lives at sea.

They recommended that all available resources be pooled to develop a sound management program for the species, to include additional research into the cause of population declines and consolidation of existing data on population trends.

The plan covers three turtle species already classified as Endangered—the hawksbill sea turtle (*Eretmochelys imbricata*), leatherback sea turtle (*Dermochelys coriacea*), and Kemp's (or Atlantic\*) ridley (*Lepidochelys kempii*); and three proposed for Threatened status—the olive (or Pacific\*) ridley (*Lepidochelys olivacea*), green turtle (*Chelonia mydas*), and loggerhead sea turtle (*Caretta caretta*).

Several conservation priorities were discussed during workshop sessions on (1) testing of excluder panels for nets used by shrimp trawlers to reduce the accidental taking of sea turtles, (2) interesting turtle distributions in the Gulf of Mexico and studies of nesting beaches, (3) Caribbean activities, and (4) law enforcement.

The meeting also produced agreement that some type of sea turtle recovery team development was in order. But it was not decided whether an overall coordinating team, or a

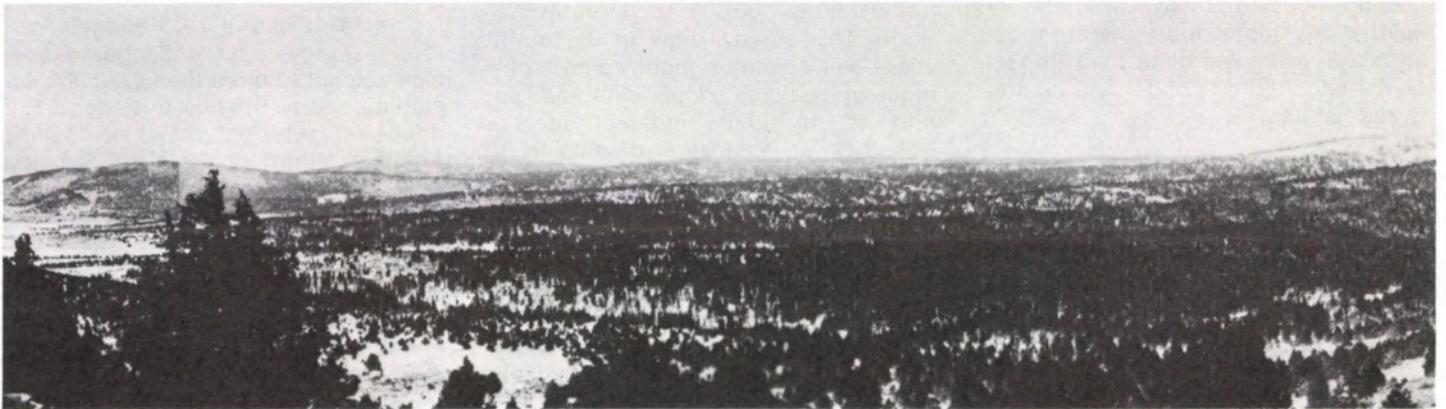
team geared to planning for each species and/or population would be the best approach.

Information developed during the meeting will be used by the FWS and NMFS to rework the draft plan. A meeting has been scheduled tentatively for January 1979 to review the revised plan, which is expected to be put into final form over the next several months.

More than 100 representatives of Federal and state agencies, private industry, universities, and conservation organizations attended. Details of their recommendations and other actions, plus a listing of items addressed at the workshops, will be available in the form of summary minutes. Copies may be obtained from the Fisheries Management Division, Southeast Region, National Marine Fisheries Service, 9450 Koger Boulevard North, Duval Building, St. Petersburg, Florida 33702.

\*Participants agreed that the Atlantic and Pacific ridleys should be commonly named the Kemp's and olive ridleys, respectively.

## Prime Bald Eagle Roosting Site Protected from Logging



A panoramic view of the newly acquired Bear Valley National Wildlife Refuge

U.S. Forest Service photo

The Service has acquired by condemnation a 240-acre stretch of privately owned timberland in Klamath County, Oregon, that is used nightly by about 300 roosting bald eagles (*Haliaeetus leucocephalus*). This is the largest known roosting site of the species (which is listed as Threatened in Oregon) in the lower 48 states.

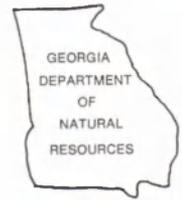
Logging of the area, which is covered with tall ponderosa pines, was

to have been started June 1 by the Thomas Lumber Company, which had purchased the timber from the landowner. On May 31, the U.S. attorney filed a "declaration of taking" with an "order of immediate possession" in U.S. district court in Portland to acquire the property and establish it as the Bear Valley National Wildlife Refuge.

The Service said negotiations to

buy the property had been under way for two months, but had stalled over agreement on price; consequently, the condemnation proceeding was the only way to prevent the pine tree eagle roosts from being cut down. At the time of acquisition, the Service's appraised value of \$200,000 for the land was deposited with the court, which will determine just compensation for the landowner at a later date.

## Georgia Broadens Scope Of Endangered Species Conservation



The future of a small population of Colonial (or St. Mary's) pocket gophers (*Geomys colonus*), listed as endangered by the State of Georgia, is one of the major issues now being considered under Georgia's Protected Species Program.

The gophers, believed to number less than 50, inhabit a 12-square-mile area in Camden County that is intensively managed for commercial timber and presently in a state of rapid development. Biologists say alteration of the area, if not carefully regulated, could cause the demise of the gophers.

Accordingly, the Georgia Department of Natural Resources has launched a status survey of the gopher to determine the size and location of colonies, life history and reproductive trends, and the feasibility of establishing new colonies in nearby habitat.

Also to be resolved is the taxonomic status of *G. colonus*, as it has not been clearly distinguished from a similar species, *G. pinetis*—a pocket gopher that also occurs in Camden County but is not on the State's endangered list.

Georgia's Endangered Wildlife Act of 1973 encourages the preservation of endangered species habitat. The effects of timber harvesting, farming, grazing, housing construction, and industrial development are therefore being studied to determine their impact on the endangered gopher and its preferred habitat.

### Federal Aid Projects

Georgia signed a cooperative agreement with the Fish and Wildlife Service last October, making the State eligible to receive Federal Endangered species grant-in-aid matching funds to expand its endangered species conservation efforts. The Colonial pocket gopher study, contracted through the University of Georgia and expected to cost \$19,000 through fiscal year 1979, has been approved for two-thirds matching fund assistance.

Other ongoing Federal aid research projects include a distribution study of the eastern indigo snake (*Drymarchon corais couperi*) and a survey of the American alligator (*Alligator mississippiensis*). The \$18,000 study of the snake, now listed by the Federal Government as well as Georgia as a Threatened species, will attempt to determine the current status and range



An eastern indigo snake explores ground cavity

Photo by Ronald Odom,  
Georgia Dept. of Natural Resources

of the eastern indigo and to locate prime habitat areas along the coastal plain for later protection and/or management. (Once documented, areas determined essential to the snake's continued survival will be considered for Federal designation as Critical Habitat.)

Currently, the Georgia Department of Natural Resources estimates there are 80,000 to 100,000 alligators in the State. This survey—now in its fourth year—will employ a night count technique to establish population trends as part of an annual regional survey. Based on an evaluation of data from the 1978 survey and an additional survey by State biologists, the department's Game and Fish Division recently proposed removal of the alligator from Georgia's protected species list, in that the density of the alligator population in some coastal areas has reached the nuisance level. The alligator is now federally classified as Endangered in all of Georgia except coastal areas, where it is listed as Threatened.

A total of 23 animal species, including 19 on the Federal list, have been classified as endangered by Georgia. Under its Wildflower Preservation Act of 1973, the State lists 58 plants as endangered or threatened. The list includes persistent trillium (*Trillium persistens*), a member of the lily family that recently received Federal protection as an Endangered species (see the May 1978 BULLETIN).

### State ES Management

Endangered species research and management is coordinated by the Game and Fish Division and partially funded out of general State revenues. The endangered wildlife coordinator is Ron R. Odom, a wildlife biologist, who is assisted by Rosalind Platt. Mary Ann Neville acts as coordinator for endangered plants.

The FY 1978 and 1979 budgets currently approved for endangered species amount to more than \$110,000, including nearly \$75,000 in Federal Endangered species matching funds. About one-third of the grant is being directed toward information and education, to be coordinated through separate offices of the natural resources department.

Odom believes the development of a sound public relations effort during the initial stages of Georgia's Protected Species Program will help lay a firm foundation of public support and understanding on which to build an expanded, adequately staffed program in future years. Project personnel are already working to produce a 30-minute film on Georgia's endangered species, and will soon begin updating the department's endangered wildlife publications. (Two illustrated reports now available from the department are "Georgia's Protected Wildlife," which contains descriptions of endangered and threatened animals, and "Georgia's Protected Plants," describing all listed plant taxa.)

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Federal funds also are being applied to endangered species administration and coordination (to cover salaries, equipment, and operating expenses) and to law enforcement officer training in endangered species identification, natural history, and habitat needs.

### Contract Studies

In addition to implementing and coordinating endangered species efforts, the Game and Fish Division administers the statewide game management program (and associated fish and game licensing). The division's general management and protective measures for both nongame and endangered species involve population research and surveys, ecological research, habitat acquisition and preservation, captive propagation and restocking, and pesticides monitoring.

Leon Kirkland, director of the Game and Fish Division, believes the contract approach to endangered species conservation is the only way to operate effectively within the present budgetary constraints. "Much of our endangered species work is contracted out," Kirkland says, "because we feel most of the expertise on our rare resident species may now be found at the private and university levels."

In addition to the federally supported studies, the State has contracted work on the following federally listed species and subspecies: the Florida manatee (*Trichechus manatus latirostris*), shortnose sturgeon (*Acipenser brevirostrum*), American peregrine falcon (*Falco peregrinus anatum*), and bald eagle (*Haliaeetus leucocephalus*).

Georgia anticipates expanding its endangered species research activities through FY 1979, with proposed projects expected to cost nearly \$185,000 (over and above the amount budgeted for current federally supported projects). The State's proposed activities (none of which have been approved for Federal grant-in-aid assistance in FY 1979) include:

- Status determinations of selected vertebrates (based on reports from a 1974 endangered species workshop)
- Coordination of research efforts and management of nesting female loggerhead sea turtles (*Caretta caretta*) on Georgia coastal islands
- Studies of hatchery techniques to promote propagation of loggerhead sea turtles in Georgia
- Continuation of the Ossabaw loggerhead conservation and research program
- Statewide osprey (*Pandion haliaeetus*) nesting survey
- Restoration of bald eagle populations on the Georgia coast.

### Lousewort (continued from page 1)

project—intended to provide a source of electricity to help meet the anticipated future power needs of New England—involves the construction of two dams in northern Aroostook County that would flood approximately 88,000 acres of land and 267 miles of streams, including 55 miles of the St. John River.

If the dams were built as planned, the Service said in its proposal, 353 Furbish lousewort plants at thirteen stations over 35 miles of the plant's range would be inundated. Within the 70-mile zone downstream from the project, 162 more plants at five stations would be jeopardized by dumping of refuse over river banks, construction, and other stream bank modifications.

### Biological Factors

In devising a proposed conservation program to resolve the conflict, the Service said various aspects of the lousewort's reproductive and population biology were of critical importance. Of primary concern is the fact that natural establishment of new lousewort colonies may depend upon prior disturbance of river banks, either by flooding or landslides. Moreover, artificial establishment of new colonies is dependent upon knowledge of possible hemiparasitic relationships, transplant techniques, and seedling establishment.

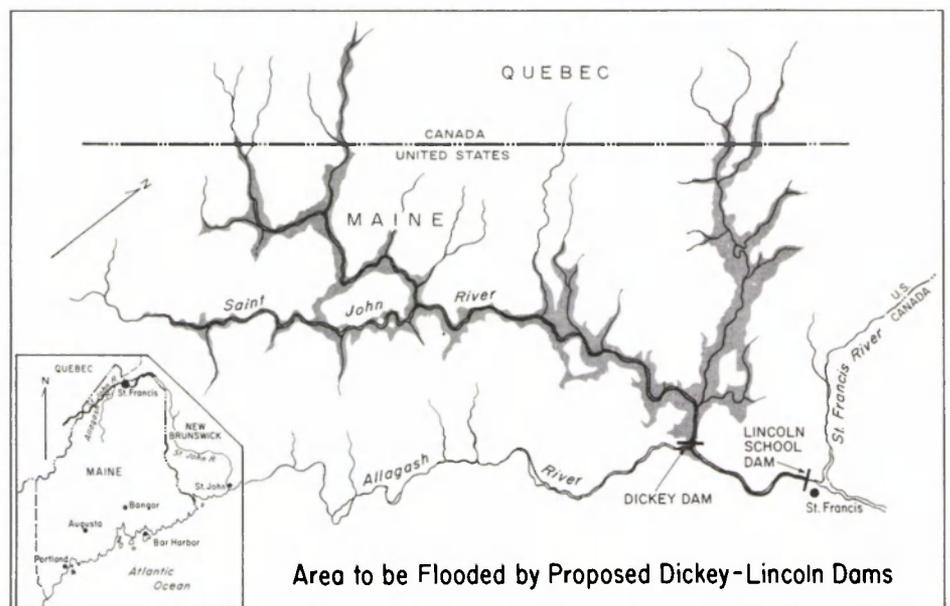
The biological data indicate the lousewort is an obligate outbreeder, hence the presence of appropriate bumblebee (*Bombus vagans*) populations is necessary to ensure seed set and genetic variability of progeny.

Accordingly, the Service said the conservation program should include, at a minimum, the following elements:

1. Development of information leading to a functional understanding of the habitat needs and propagation techniques of the Furbish lousewort.
2. Acquisition and protection of existing habitats below the project impoundment area that currently support lousewort populations.
3. Acquisition of habitat identified as capable of supporting new populations of louseworts.
4. Establishment of new, self-sustaining colonies through transplantation, seeding, or other appropriate techniques.
5. Obtaining better information on the effects of post-construction downstream flows on the lousewort and its habitat.
6. Development of a monitoring program capable of detecting any changes in the lousewort's biological status, such as habitat changes, population increases or decreases, and any significant variations in microclimatic conditions.

The Service's biological opinion—the first involving an Endangered plant—cautioned that if any new information is developed during the conservation program that would affect the lousewort, consultation must be reinitiated immediately.

Service biologists believe that, if the conservation program is followed, it could result in increased numbers of the species and better protection of the plant's habitat.



Area to be Flooded by Proposed Dickey-Lincoln Dams

# Black-Footed Ferret Recovery Tied to Prairie Dog Management

(continued from page 1)

oped and existing wild populations must stave off extinction of the species in the foreseeable future. Since we know little of the biology of the black-footed ferret, research is essential. Management, however, must proceed based upon the limited information available."

## In Search of Ferrets

Originally, the ferret's range extended from Saskatchewan and Alberta, Canada, down across the Great Plains into Texas, New Mexico, and Arizona. There is some evidence that the ferret, while uncommon because of the infrequency of confirmed sightings, may not have been as rare as once believed. But there seems little doubt that it declined when systematic eradication programs were carried out against the prairie dog—the ferret's chief prey—starting in 1900.

Control efforts currently are keeping prairie dog numbers at relatively low levels in most areas within the ferret's former range. Since 1964, there have been a number of black-footed ferret sightings at prairie dog towns in South Dakota. (Four specimens involved in the Patuxent Wildlife Research Center propagation project were captured in

the early 1970's in the State. Only three of these still survive.)

To locate more ferret habitat, the recovery plan recommends that priority be given to (1) mapping of prairie dog towns, and (2) mounting searches of the most promising towns for the ferret. The recovery team said that theoretically all prairie dog towns are potential ferret habitat, but small, isolated towns probably will not sustain a ferret population.

The plan also recommends searching other areas, such as pocket gopher colonies, kangaroo rat diggings, and ground squirrel colonies, for ferret habitat. There have been prior reports of ferrets in such locations.

## New Search Techniques

Emphasis should be placed on searching areas where black-footed ferrets have been reported in the last decade, the team said. To aid the traditional visual type of survey, the team has recommended development of new techniques, including odor sensing, photography, gas chromatography, baiting, and the use of trained dogs.

The Service's Denver regional office personnel and New Mexico's Endangered Species Program currently are

involved in projects to train dogs to sniff out ferrets. (See the June 1978 BULLETIN.)

As a further aid in finding the elusive creature, the recovery plan says sightings by the public should be solicited.

The States cooperating in the recovery plan, in addition to New Mexico, are Arizona, Colorado, Kansas, Montana, Nebraska, North Dakota, Oklahoma, South Dakota, Texas, Utah, and Wyoming. Total Federal costs for executing the plan were estimated at \$1.6 million over a three-year period, with the Service providing most of the funding. Additional contributions would be made by the 12 States.

Once black-footed ferrets are located, the recovery plan details steps for protecting and managing wild populations. The goal of maintaining at least one population in each of the States may be accomplished, in some instances, through transplants.

"Attainment of the primary objective will not necessarily result in removal of the black-footed ferret from the list of Endangered species," the team said. "However, it will provide a measurable degree of protection against extinction of the species."

# Habitat Restoration Mapped For Three Hawaiian Waterbirds

(continued from page 1)

established an extensive system of coastal fish ponds and engaged in large-scale wetland taro farming. But as the composition of the human population of the islands changed, bringing new dietary preferences, taro cultivation declined sharply—from about 19,000 acres in 1900 to only 510 acres in 1960.

Part of the loss in taro field habitat was cushioned for several decades by rice culture. But this ended around 1963. In the meantime, there was a widespread conversion of former natural and manmade wetlands to other agricultural applications and to such urban uses as sites for hotels, housing subdivisions, golf courses, shopping centers, military bases, highways, and industrial plants. The recovery team said the encroachment of exotic species of plants, such as mangrove and *Panicum* grass, has degraded much of the remaining habitat, and the introduction of predators (cats, dogs, mongooses, and three species of rats) along with hunting (which was permitted until 1939) have also played a part in the birds' decline.

## Habitat Acquisition

The recovery team identified certain land and water areas as "primary habitat" for the waterbirds and set forth a plan for protecting and stabilizing them through acquisition and more intensive management. Secondary habitat areas and former or potential areas have been noted by the recovery team for future development.

A number of ponds on the islands of Oahu, Maui, Molokai, Hawaii, and Kauai have been recommended either for acquisition by the Service as refuges or for more intensive management in the case of ponds already on Federal, State, or city property.

One of the largest proposed purchases is Kealia pond, near the rapidly expanding resort area of Kihei on the southern shore of Maui. The recovery team said the pond is one of Hawaii's most important areas for wintering migratory waterfowl and shorebirds and, if fully developed, "could well be the best area in the State for stilt and possibly coot." Because the area is subject to urbanization, however, the team feared that acquisition of a 500-

acre tract including Kealia pond for a refuge could cost in excess of several million dollars.

On the island of Oahu, the plan recommends the development of Kii and Punamano ponds, which have gone dry, to compensate for the loss of important waterbird habitats at Kaelepula and Kuapa ponds, Salt Lake, and Moanalua. Restoration is recommended for Kawainui marsh, a former fish pond and the largest freshwater marsh (750 acres) left in the State.

## Productivity Measures

The recovery plan says more public education and better law enforcement are needed to protect the waterbirds, especially during the breeding season.

The team said water levels in refuges and other habitat areas should be carefully managed to maximize nesting success and enhance food availability. Several research studies were recommended to increase knowledge about mortality factors, life history, and feeding habits, which also could lead to enhanced productivity of the three subspecies.

# Rulemaking Actions – June 1978

## Critical Habitat Named For Long-Toed Salamander

Two land-and-water areas in Santa Cruz County, California, have been proposed by the Service as Critical Habitat for the Santa Cruz long-toed salamander (*Ambystoma macrodactylum croceum*), an Endangered subspecies that ranks among the rarest amphibians in the United States (F.R. 6/22/78).

Comments from the public on this proposed rulemaking should reach the Service no later than July 22; comments from the Governor of California are due by September 21.

### Background

The existence of this salamander remained unknown until 1954, when the animal was discovered at Valencia Lagoon, just north of Rio Del Mar near the shores of Monterey Bay. Two years later, a second population was found at Ellicott Slough, about four miles to the southeast. Subsequently, several other populations were discovered in both Santa Cruz County and adjoining Monterey County.

Biological studies revealed that the salamander lives in areas of woodland and chaparral for most of the year. The animal is rarely seen, except when it migrates to breed in nearby freshwater ponds, which provide sufficient

space for larval development and an adequate food supply for the larvae.

The total population of this subspecies is less than 10,000.

### Need for Protection

Because of its extremely limited range and specialized breeding habits, the salamander, which has been listed as Endangered since 1967, is very vulnerable to habitat alteration. As the Service emphasizes, "any further degradation of . . . [the subspecies'] living space would be critical to its survival."

Steps have already been taken to protect, restore, and manage this living space, especially at Valencia Lagoon and Ellicott Slough, which constitute a substantial portion of the subspecies' entire known range and have been identified as "essential habitat" by the Santa Cruz Long-Toed Salamander Recovery Team.

Critical Habitat designation for the Valencia Lagoon area (about 65 acres) and the Ellicott Slough area (about 157 acres), a large percentage of which is now owned by the State of California and the U.S. Fish and Wildlife Service (and thereby protected from major disturbance), will provide full protection to the salamander under section 7 of the Endangered Species Act of 1973.

## Snail Darter Recovery Team

The Service has appointed a recovery team for the snail darter (*Percina tanasi*), an Endangered species that played a central role in the U.S. Supreme Court's recent landmark decision on the Tellico Dam located in Tennessee (see the June 1978 BULLETIN).

The team, established on the joint recommendation of Assistant Secretary of the Interior Robert L. Herbst and Tennessee Valley Authority Board of Directors' Chairman David Freeman, is headed by Harold Hurst, regional manager of the Tennessee Wildlife Resources Agency.

The team will collect more information on the status and biological requirements of the snail darter and will then develop a comprehensive recovery plan. Consideration will be given to such options as captive breeding and reestablishment of the fish outside of its present range on the Little Tennessee River.

Other members of the recovery team include Price Wilkins, Tennessee Wildlife Resources Agency; Wayne Starns and David Etnier, University of Tennessee; Richard Fitz and Gary Hickman, Tennessee Valley Authority; and Hallett Boles, U.S. Fish and Wildlife Service.



Kauai cave amphipod

Photo by W. P. Mull, Bishop Museum, Honolulu

## Kauai Cave Wolf Spider Kauai Cave Amphipod

The Service has issued a proposed rulemaking to designate the Kauai cave wolf spider (*Adelocosa anops*) as Endangered and the Kauai cave amphipod (*Spelaeorchestia koloana*) as Threatened, and to determine Critical Habitat for both species (F.R. 6/16/78).

The Service believes that these species require full protection under the Endangered Species Act of 1973, in that both arthropods are experiencing decreasing population levels and ad-

verse habitat modification, and their entire known range is limited to only three localities on the Hawaiian island of Kauai.

The Service has set the following deadlines for the submittal of comments on this proposal: August 15 for the public and September 14 for the Governor of Hawaii.

### Kauai Cave Wolf Spider

This spider is found only in an underground lava tube known as Koloa Cave No. 2, which is located on the southeastern coast of the island of Kauai.

Human activities represent the chief threat to the species and its habitat. Listed and marked as a civil defense shelter, located near a recently completed highway, and well known to the public, the cave has become subject to increased visitation. The entire cave has been recommended as Critical Habitat for the spider.

### Kauai Cave Amphipod

This species occurs in Koloa Cave No. 2 and also in the nearby Koloa Cave No. 1, as well as in a small limestone cave 7 kilometers (almost 5 miles) away. Like the other cave, Koloa Cave No. 1 is a 150-meter-long lava tube that is listed and marked as a civil defense shelter and has been subjected to increased human visits.

The limestone cave, a large, elevated sea cave in which detritus from tree roots provides food for the amphipod, is being destroyed by quarrying activities.

All three caves have been proposed as Critical Habitat for this species.

## Pending Rulemakings

The Service expects to issue rulemakings and notices of review on the subjects listed below during the next 90 days. The status or action being considered for each final and proposed rulemaking is given in parentheses.

The decision on each final rulemaking will depend upon completion of the analysis of comments received and/or new data made available, with the understanding that such analysis may result in modification of the content or timing of the original proposal, or the rendering of a negative decision.

### Pending Final Rulemakings

- 6 butterflies (C.H.)
- Grizzly bear (C.H.)
- 13 crustaceans (E, T)
- Black toad (T, C.H.)
- New Mexican ridge-nosed rattlesnake (T, C.H.)
- 2 zebras (E)
- 7 Eastern land snails (E, T)
- 12 Western snails (T)
- 2 big-eared bats (E)
- 3 Ash Meadow plants (E)
- 5 plants (E)
- 6 San Francisco Bay Area plants (E, T)
- 2 California plants (C.H.)
- Leatherback sea turtle (C.H.)

### Pending Proposed Rulemakings

- 10 North American beetles (E, T)
- 2 harvestmen (E, T)
- 3 mussels (C.H.)
- Rocky Mountain peregrine falcon population (C.H.)
- Colorado squawfish (C.H.)
- Virgin River chub (E, C.H.)
- Desert tortoise (Beaver Dam slope population) (E, C.H.)
- Deregulation of Tecopa pupfish
- Unarmored threespined stickleback (C.H.)
- Puerto Rican whip-poor-will (C.H.)
- Laysan duck (C.H.)
- Whip-scorpion (E, C.H.)

## BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
<b>Mammals</b> .....	33	227	260	3	18	21
<b>Birds</b> .....	68	144	212	3		3
<b>Reptiles</b> .....	10	46	56	6		6
<b>Amphibians</b> .....	5	9	14	2		2
<b>Fishes</b> .....	29	10	39	12		12
<b>Snails</b> .....		1	1			
<b>Clams</b> .....	23	2	25			
<b>Crustaceans</b> .....	1		1			
<b>Insects</b> .....	6		6	2		2
<b>Plants</b> .....	15		15	2		2
<b>Total</b> .....	190	439	629	30	18	48

Number of species currently proposed: 137 animals  
1,850 plants (approx.)

Number of Critical Habitats proposed: 45

Number of Critical Habitats listed: 29

Number of Recovery Teams appointed: 62

Number of Recovery Plans approved: 18

Number of Cooperative Agreements signed with States: 21

June 30, 1978

- Valdina Farms salamander and isopod (E, C.H.)
- Blunt-nosed shiner (E)
- 10 butterflies and moths (E, T, C.H.)
- 2 plants (E) and 6 plants (C.H.)
- San Marcos Spring fish and salamander (E, T, C.H.)
- 20 Appendix I spp.
- Cui-ui (C.H.)
- Whooping crane (C.H.—additional areas)
- Illinois mud turtle (E, C.H.)
- Bolson tortoise (E)
- Coachella Valley fringe-toed lizard (T, C.H.)
- 7 Oregon freshwater fishes (E, T, C.H.)
- Light-footed clapper rail and California least tern (C.H.)
- Yellow-shouldered blackbird (C.H.)
- 2 Virginia fishes (T, C.H.)
- 3 Texas fishes (E, T, C.H.)

- 1 Texas/New Mexico fish (E)
- Leopard (reclassification to T)

### Pending Notice of Review

- Desert tortoise

Abbreviations: E=Endangered, T=Threatened, C.H.=Critical Habitat

### New Publication

The Service has issued *An Illustrated Guide to the Proposed Threatened and Endangered Plant Species in Colorado*. The 114-page guide was prepared under contract by Ecology Consultants, Inc. of Fort Collins, Colorado. Copies may be obtained from the Fish and Wildlife Service, P.O. Box 25486, Denver, Colorado 80225.



## ENDANGERED SPECIES TECHNICAL BULLETIN

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