



ENDANGERED SPECIES TECHNICAL BULLETIN

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

Recovery Plan Approved For Protecting Ecosystem of Hawaii's Endangered Palila

A final recovery plan for the Endangered palila (*Psittirostra bailleui*), a member of the endemic Hawaiian honeycreeper family, has been approved by the Service.

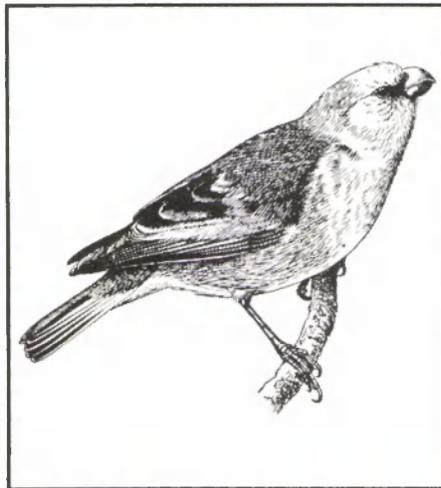
The plan's primary objective is to restore the bird to nonendangered status on State-owned lands flanking Mauna Kea, the highest mountain on the Island of Hawaii. This would be accomplished in part by eradicating all feral sheep and goats that are threatening the palila's last remaining habitat, an ecosystem of mamane (*Sophora chrysophylla*) and naio (*Myoporum sandwicense*) forests above the 6,000-foot level.

The recovery team, headed by Andrew J. Berger of the University of Hawaii, said, "If the present destruction and modification of the mamane-naio ecosystem being done by these animals can be stopped, achievement of the plan's primary objective will be 90 percent complete."

At the turn of the century, the palila ranged over a large part of the island, including the slopes of adjacent Mauna Loa. The reasons for the drastic reduction in range are not fully known, the recovery team said.

Palila Population Determined

Currently, the recovery team estimates the total palila population at 1,400 individuals. These birds are found on or near the Mauna Kea Forest Reserve and the Kaohe Game Management Area, which are under State jurisdiction and located on the northwestern slopes. The recovery plan recommends that two parcels of land be acquired for inclusion in these two areas to provide additional protected habitat for the bird. Both parcels would be fenced to keep out livestock from adjacent pastures.



Drawing courtesy of Dover Publications

Palila's thick bill is adapted to tearing open tough pods of mamane tree

In 1937, there were an estimated 40,000 sheep roaming Mauna Kea, about one animal for every two acres. Since 1955, sheep populations have been reduced somewhat, and vegetation has recovered at lower elevations of the Mauna Kea Forest Reserve. However, the recovery team said, "at higher elevations between 8,000 and 10,000 feet, degradation of the ecosystem continues," necessitating the eradication of all sheep and goats to protect the mamane-naio forest on which the palila is totally dependent.

Other Species To Benefit

The recovery team noted that the plan also would benefit five other Endangered endemic birds that occur on Mauna Kea. These include the Hawaiian dark-rumped petrel (*Pterodroma phaeopygia sandwichensis*), Hawaiian hawk (*Buteo solitarius*) Hawaii creeper (*Loxops maculata mana*), Hawaii akepa (*Loxops coccinea coccinea*), and akiapolaau (*Hemignathus wilsoni*).

(continued on page 3)

Critical Habitat Determined for Houston Toad

Parts of two southeastern Texas counties have been designated as Critical Habitat for the Endangered Houston toad (*Bufo houstonensis*). In a final rulemaking issued by the Service (F.R. 1/31/78). The ruling is scheduled to become effective on March 3, 1978.

The habitat areas designated in the ruling are (1) an area in Bastrop County, northeast of the town of Bastrop, that includes two Texas state parks, and (2) an area in Burleson County, near the town of Caldwell.

Service officials say that the best populations of this extremely rare amphibian live near Bastrop, while a much smaller but still viable population exists near Caldwell.

This small brown, secretive toad lives in isolated stands of loblolly pine (spottily distributed in southeastern and central Texas) and is usually seen only during its spring breeding season. The total population of the toad, which has been listed as Endangered since 1970, is roughly 1,000 to 1,500 individuals.

In its proposed rulemaking, published in the *Federal Register* on May 26, 1977, the Service also identified six localities in Harris County, which includes the city of Houston, as potential Critical Habitat for the Houston toad (see June 1977 BULLETIN).

City Areas Excluded

In the final rulemaking, however, the Service found that, although remnant populations of the toad may exist in some of these localities, none of these areas should be listed as Critical Habitat at the present time. This determination was based largely on the findings of a special review team organized by the Service, consisting of Service personnel, consultants, and a representa-

(continued on page 3)

Regional Briefs

Endangered Species Program regional staffers report the following developments in their areas in recent weeks:

Region 1. A fire swept through more than 600 acres of precious mamane trees—Critical Habitat for the Endangered palila (*Psittirostra baillieui*)—on the slopes of Hawaii's Mauna Kea during December. The blaze reportedly started on the U.S. Army's Pahakuloa Training Area and spread to the mamane forest, which is situated on State land.

Field surveys conducted during December failed to locate a single Marianas mallard (*Anos oustaleti*). One island remains to be checked for the bird, but the outlook is bleak. The mallard was listed as Endangered on June 2, 1977, and formerly ranged on the islands of Rota, Saipan, Tinian, and Guam.

Transect surveys will get underway shortly in Hawaii's Kona District as part of the continuing status and distribution studies of Endangered endemic forest birds. Representatives of Federal, State, and private agencies are participating on the transect teams.

Region 2. Details of a final plan for restoring the Atlantic Ridley sea turtle (*Lepidochelys kempii*) were agreed upon at a meeting in January of Jack Woody and other Service members with representatives of the National Park Service, the Texas Parks and Wildlife Department, and the Mexican Government. One objective of the plan is to establish a second breeding population of the turtle on the Texas gulf coast, using artificially incubated eggs.

The species has dwindled to about 2,000 individuals from a population previously estimated at 40,000. Last July, Mexico established an endangered species conservation zone around the Atlantic Ridley's only known nesting area.

Region 4. Dr. Noel F. R. Snyder of the Patuxent Wildlife Research Center has begun a study of the potential effects on wildlife if the level of Florida's Lake Okeechobee is raised by a proposed Army Corps of Engineers project. The study will include the banding of Florida Everglade kites (*Rostrhamus sociabilis plumbeus*) to determine their dispersal characteristics. Other measurements will be made to gauge how a water level increase would affect the kite's productivity, as well as the pop-

ulation of the apple snail, on which the kite depends for food, and other lake biota.

A total of 706 snail darters (*Percina tanasi*) have been netted below the Tennessee Valley Authority's Tellico Dam and moved four miles upstream to Coytee Springs on the Little Tennessee River since last November 14. Diving operations have been temporarily interrupted by cold weather, a lack of available divers, and a pending Service decision on appropriate techniques for marking the transplanted darters.

Region 5. Restoration activities for the recently rediscovered Virginia round-leaf birch (*Betula uber*) will be coordinated by a newly established protection management and research committee composed of representatives of various Federal agencies, the National Arboretum, local universities, and private citizens. Plans call for establishing a public viewing area, reintroduction of cultivated seedlings to selected areas, and other conservation measures to be carried out this spring.

Region 6: Preliminary plans are being made by regional personnel, in cooperation with recovery team members, to train a dog to locate black-footed ferrets (*Mustela nigripes*) in the wild. Initial attempts using this technique will be made in late spring in South Dakota, pursuant to the recovery plan for the species (which recommends such experimentation).

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Editor's Note

In the December 1977 BULLETIN's lead story ("Special Agents Play Deterrent Role in Aiding ES"), we neglected to emphasize that our Service's law enforcement agents cooperate closely with personnel from the National Marine Fisheries Service (NMFS), in addition to the other agencies mentioned, in their special investigations. In fact, our law enforcement personnel work so closely with NMFS in their jointly mandated responsibility to enforce the Endangered Species Act that we could well have taken their needed assistance for granted—at least for the purposes of this article. We would like to thank those BULLETIN readers who brought this matter to our attention, in that the Division of Law Enforcement recognizes and appreciates the valuable services contributed by NMFS personnel.

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The akiapolaau is a permanent resident of the mamane-naio forests, occurring in low numbers. According to the recovery team, maintenance of this population may serve to preserve genetic variability and thereby help ensure the akiapolaau's survival.

As recently as 1970, the recovery team said, the dark-rumped petrel was sighted on Mauna Kea and may still nest there. The Hawaiian hawk is found primarily on the eastern slopes of Mauna Kea and has been known to breed on the northwestern slopes. The akepa and creeper are rare in the palila habitat and may occur only as birds of passage.

The recovery team estimated the cost of implementing the plan at a total of \$456,150 through fiscal year 1986. This sum would provide funds for a number of studies on the mamane-naio forests.

Toad (continued from page 1)

tive of the Texas Parks and Wildlife Department. The team met in Houston in October 1977 and reviewed all of the localities proposed as Critical Habitat in an effort to determine both the suitability of habitat and potential threats. The specially appointed team reported that two of the proposed areas in Harris County contained neither suitable habitat for the species nor clear evidence of resident toads.

For the other four areas in the county, data were deemed insufficient at present to warrant inclusion of the areas in the Service's rulemaking.

Comments on the Proposal

The Service received comments from a total of 26 individuals and organizations. Of these, 16 expressed support for all or most parts of the proposed ruling, 7 opposed all or major portions of it, and 3 provided information without discussing the proposal's merits.

Lauren E. Brown (Illinois State University) supported the proposal in its entirety, emphasizing that the Houston toad, with a population he estimated at probably not more than 300, has been repeatedly mentioned by various authors as a species that should have a high priority for protection and rehabilitation. Brown also argued that all of Harris County, including the Houston area, is potentially Critical Habitat for the toad.

The principal objections to the proposal focused on the six areas in Harris County. Congressman Robert Gage (22d District), for example, called for a compromise that would allow for continued urban development in the county and also prevent intrusion on the

Plan Maps Recovery of Cui-ui Population

The Service has approved a recovery plan designed to restore the cui-ui (*Chasmistes cujus*), a species of sucker found only in Pyramid Lake, Nevada, to the point where it may be possible to reclassify the fish from Endangered to Threatened.

Along with the lake's population of cutthroat trout, (*Salmo clarki henshawii*), the cui-ui formerly was a staple in the diet of the Pyramid Lake Paiute Indians. In the 1930's, however, partial diversion of the Truckee River, which flows from the Sierra Nevada into the lake, resulted in the extermination of the trout and a severe reduction of the cui-ui's population. Construction of the Derby Dam lowered the lake's water level by 80 feet and blocked the path of cui-u's attempting to spawn in the Truckee River.

In 1976, the Bureau of Reclamation completed a fishway in the Truckee to provide cui-u's and Lahontan cutthroat trout with access to spawning grounds. The recovery team, headed by Earl Pyle of the U.S. Fish and Wildlife Service, says this was a key step toward restoration, but that "optimism must be tempered by concern for the quality of the habitat and utilization of the fishway by the cui-ui."

The recovery team notes that the reduced flow of water into the lake has resulted in a "greatly accelerated rate of accumulated total dissolved solids which, if continued, can be expected to have an enormous impact upon the biota of the lake." (Several species of snails in Pyramid Lake are now believed to be extinct.)

Recovery Plan Steps

Accordingly, the recovery plan is directed at both improving habitat and increasing the cui-ui population. Major recommended steps are as follows:

- Restore the Truckee River habitat, including reduction of water pollution and maintenance of the fishways.
- Determine optimum habitat conditions in Pyramid Lake and take appropriate actions to see that these conditions are restored or maintained.
- Augment the Pyramid Lake population with 2 million hatchery-reared cui-u's annually until natural reproduction is established.
- Establish viable subpopulations at other suitable sites if needed.

The cost of carrying out the plan is estimated at \$2.3 million through fiscal year 1980.

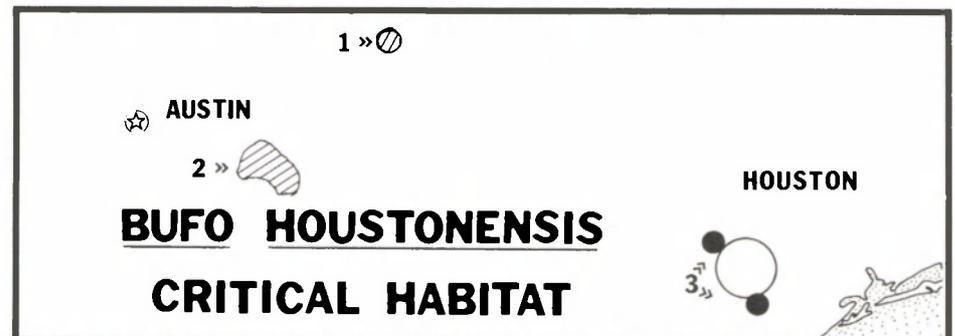
toad's habitat. He also suggested that public lands be evaluated for possible designation of Critical Habitat, in that such areas are unlikely to be encroached on by private developers.

The use of public lands as alternative toad habitat was also suggested by several organizations and individuals, including a spokesman for the Texas Parks and Wildlife Department and R. L. Lewis of the Texas Department of Highways and Public Transportation.

Lewis pointed out that some of the proposed localities in Harris County are already developed areas or fall directly in the path of current urban growth. Given that very little of the land proposed is under Federal control, he said privately financed ventures could adversely alter the toad's environment

irrespective of Critical Habitat designation. Lewis also recommended the inclusion of several additional areas as potential transplant sites.

The Service is now funding a \$10,300 status survey of the toad and its habitat needs in Harris County through the University of Houston. The surveyors will concentrate on locating toad tadpoles (easier to find than adult toads) and will use tape-recorded toad calls to stimulate "chorus" sounds so that they may determine if any Houston toads remain in the vicinity. If any of these areas are determined critical to the survival of the species, the Service will publish a final determination of Critical Habitat in Harris County at the appropriate time.



- 1 BURLSON COUNTY (final)
- 2 BASTROP COUNTY (final)
- 3 HARRIS COUNTY -- still under consideration (not finalized)

Eagle, Fox Squirrel Top Maryland's ES Agenda

Maryland's Nongame and Endangered Species program is picking up more momentum this year with Federally aided recovery efforts for the American bald eagle (*Haliaeetus leucocephalus*) and the Delmarva fox squirrel (*Sciurus niger cinereus*) receiving priority.

Established under a 1972 State law, the Maryland Wildlife Administration's program is responsible for managing more than 400 species of nongame wildlife and 35 species listed as endangered, including 14 that also are protected under the Federal Endangered Species Act of 1973. The program has been expanding since Maryland signed a cooperative agreement with the U.S. Fish and Wildlife Service in 1976, qualifying the State for matching fund assistance which amounted to \$129,100 in fiscal year 1977, and is scheduled at \$186,800 for fiscal year 1978.

The State budget for the program totals \$51,800 in fiscal year 1978. To date, \$22,700 in 1978 Federal aid funds have been approved for allocation, and they will be used to strengthen State law enforcement, especially for four federally listed Endangered species: the bald eagle, Delmarva fox squirrel, American peregrine falcon (*Falco peregrinus*), and red-cockaded woodpecker (*Dendrocopos borealis*). Enforcement efforts will include the patrol of areas where these species exist, inspection of such business establishments as taxidermists and animal dealers to determine if Endangered species or their products are passing through, and training of law enforcement personnel to help them in the identification of protected species.

Eagle Comeback

Program manager Gary Taylor says the annual survey of the Chesapeake Bay bald eagle this spring should give some indication whether that part of the population nesting in Maryland is, in fact, making a comeback. Last year's census showed 47 young were hatched in 27 nests and 45 eaglets fledged—compared to only 13 hatched in 1970 in the State, while Virginia's eagle population remained depressed (see the August 1977 BULLETIN).

Major concentrations were found in Maryland's Dorchester County, where the Blackwater National Wildlife Ref-

uge is located (probably the most inaccessible and protected habitat area). Small stable populations exist in Charles and St. Mary's Counties.

When this year's eaglet production figures are tallied in mid-May, Taylor says, they should indicate whether the bird is finally overcoming the effects of pesticide contamination from DDT—the common cause of eggshell thinning over the past decade. The loss of suitable nesting habitat and disturbance by man remain as potential threats to the population.

Maryland's part in the recovery effort includes monitoring the breeding eagle population's status through annual aerial and ground surveys and re-checking active nest production, banding nestling eaglets to determine their movements, and gaining information on prey items, including the identification of contaminants. The latter work is done with the cooperation of the Service's Patuxent Wildlife Research Center, located in Maryland.

The State recently has succeeded in establishing protective zones around some eagle nests on private property through verbal agreements with the landowners. The use of formal "cooperative agreements" with the owners of prime eagle nesting sites is now being investigated to promote better protection from disturbance as well as habitat maintenance. In addition, the State is engaged in surveys to determine habitat that is essential for the eagle's continued survival as part of the design and implementation of a recovery plan for this federally Endangered species.

Delmarva Fox Squirrel

At the present time, the population size of the Delmarva fox squirrel, a "salt and pepper" subspecies that weighs up to 2 pounds (about twice the size of a common gray squirrel), has not been established. The squirrel once ranged through Pennsylvania, New Jersey, Delaware, and Virginia, but now appears to be confined principally to Maryland's Kent, Queen Anne's, Talbot, and Dorchester Counties adjacent to Chesapeake Bay's eastern shore. A number of the squirrels also exist in the Chincoteague National Wildlife Refuge along the Atlantic coast where they were transplanted in 1970 and 1973.

The subspecies' decline is linked to

loss of preferred habitat and changing land use patterns. Generally, the squirrel prefers to live in small wooded areas with large trees and sparse understory, such as hedgerows or other ecotonal areas bordering large fields. Road-kill mortality has been high because the squirrels often cross roads to reach agricultural fields where they feed on corn and other crops.

As a key part of the Federal-State recovery effort, Maryland has been building and testing out nesting structures for the fox squirrels to learn more about their needs and lifestyle. More than 2,000 boxes have been hung 15-20 feet above the ground in prime habitat zones to encourage breeding and to enable scientists to observe their activities as well as potential mortality factors, such as parasites.

The boxes are checked twice during the breeding season and again in December. An examination of 1,000 boxes last spring yielded in excess of 50 Delmarva fox squirrels—more than half of them young.

"It shows we are getting some reproduction and this is encouraging," Taylor says. He notes the habitat available for the squirrel also appears to have stabilized, which could be an indication that the population decline may have slowed.

To promote an expansion in the population, the State is creating new habitat near existing locations by mechanical clearing and controlled burning of understory vegetation in suitable woodlots. Individuals are being transplanted to new areas to establish new local populations.

In addition to surveying for critical habitat in Maryland, potential release sites for transplants are being examined in Delaware and the Virginia eastern shore by the wildlife agencies of these two states. Maryland also participated in drafting a recovery plan for the species.

Red-cockaded Woodpecker

An exploration is being conducted in eastern Maryland for any remnant colonies of the red-cockaded woodpecker. The last known colonies in the State were found in the Blackwater National Wildlife Refuge. In recent months, refuge personnel have identified some solitary birds, but as yet no colonies have been documented, Taylor says. The current survey involves identifying areas of potential habitat from vegetation maps, followed up by ground searches. The woodpecker nests mainly in small stands of mature long-leaved pines (such as loblolly) where the wood has been riddled by red heart disease (a fungus), which apparently enables the bird to carve out a nesting cavity. Taylor says all potential

habitat along the lower eastern shore of the bay has been mapped and the ground search is continuing in the most promising areas.

Even if no colonies are found, the study could locate habitat suitable for reintroduction of the woodpecker, whose known range now is limited to parts of perhaps a dozen Southeastern States.

Peregrine Falcon

Maryland is one of seven Eastern States cooperating in the attempt to reestablish breeding populations of the American peregrine falcon east of the Mississippi, where the raptor has not been known to nest since the 1950's. Maryland has erected hacking-out stations for the captive-born falcons produced by Cornell University, where they are fed and attended until they have fledged about 6-8 weeks later. Maryland's hacking stations are located at the U.S. Army's Aberdeen Proving Grounds under the supervision of Dr. Prescott Ward; at the State's Merkle Wildlife Management Area; and at the U.S. Navy's Patuxent Naval Air Station.

One male peregrine from the 1975 release at Aberdeen was observed in the vicinity of its hacking tower in 1977. Other releases were made in 1977 at Aberdeen and the Patuxent Naval Air Station. This year's plans call for a release at the Merkle site.

Maryland Darter

Another federally listed species—the Maryland darter (*Etheostoma sel-lare*)—may be the State's most Endangered species. The darter is known only in Deer Creek, in Harford County, where its numbers are extremely small. Only two adult specimens were found in 1977, and no young of the year were observed.

Presently, the darter is threatened by water degradation, including pollution, excessive turbidity, and lowering of the creek level, and by the proposed construction of a water treatment plant a quarter-mile above its only known habitat. The darter's recovery team, including a representative of the Maryland Fisheries Administration, is planning a survey of the nearby Susquehanna River to learn whether any additional populations are still in existence, and is revising an initial draft of a recovery plan. The Service is preparing a proposal to determine Critical Habitat for the darter.

State Listed Species

Federal funding is assisting studies in behalf of five State-listed species: the hellbender (*Cryptobranchus allenganiensis allenganiensis*), Jefferson salamander (*Ambystoma jeffersonia-*



Maryland surveys indicate bog turtle's status is improved

num), Eastern tiger salamander (*A. tigrinum tigrinum*), the bog turtle (*Clemmys muhlenbergi*), and the bobcat (*Lynx rufus rufus*).

The hellbender, a 2-foot-long salamander found only in the extreme western portion of Garrett County and in the Susquehanna River drainages, is entirely aquatic, preferring to live in swiftmoving streams with adequate detritus to hide under. Research on the hellbender (which is threatened by habitat contamination from introduced pollutants) is proposed for this spring. But work last year has already yielded new information about the status and distribution of the other two State-listed salamanders.

Jefferson Salamander

One of the long-toed mole salamanders, *A. jeffersonianum* is also found in several Northeastern and North Central States. Until last year, it was known only in seven breeding ponds in Maryland. But a survey that began in April located a total of 25 additional breeding ponds in mountainous Alleghany County in the western part of the State. One additional breeding pond was found in the eastern part of Garrett County, extending the salamander's known range in Maryland.

Adults, which measure 4 to 6 inches, inhabit deciduous wood lots and are subterranean. They migrate generally to small, shallow ephemeral ponds in the spring to lay eggs, which hatch in 30 days. The larvae remain in the water until late May, when they migrate back to the woodlots as subadults.

State biologists say the salamander's breeding sites are being lost by filling, sediment contamination, and draining for agricultural use. Survey efforts could assist in locating new habitat for egg and larvae transplants to start new populations if necessary.

Tiger Salamander

Although indicated in the scientific literature as one of the most abundant salamanders east of the Mississippi, *A. t. tigrinum* is in much the same loss-of-habitat predicament as the Jefferson salamander in Maryland. Once known in several eastern shore counties, this 6-7-inch salamander is now confined to a few breeding ponds in Kent County. Its existence in Maryland is threatened mainly by the loss of suitable habitat. (The only known western shore breeding pond was lost when filled for a golf course.)

Maryland's survey efforts have turned up only three additional breeding sites this year. But distribution surveys are continuing, and the State also is experimenting with transplants to establish new populations in additional ponds. A drought that dried up receptor ponds before the larvae could transform and migrate disrupted an attempt last year at transplanting egg masses (which had been placed in screened boxes to allow the free-flow of the water and essential nutrients). A new attempt is expected this spring if abundant egg masses are available.

Bog Turtle

Maryland's studies of the distribution
(continued on next page)

Maryland (continued)

and status of the bog turtle (conducted with cataloging assistance from the U.S. Department of Agriculture's Soil Conservation Service) have revealed turtle populations in northern parts of eastern Maryland, where a correlation has been found between soil types and the occurrence of turtles. In fact, surveys indicate that the species may be doing better than previously believed. The turtle, which commonly has orange head patches and a carapace measuring up to 4.5 inches, prefers to live in wet meadow areas where it feeds on insects and other arthropods. Because of dense vegetation in these areas, however, the species is generally very difficult to sight.

Endangered species program manager Taylor says the turtle has been subjected to commercial exploitation for the pet trade because it is listed in scientific literature as one of the rarest turtle species, and because it adapts well to captivity. Loss of habitat from development and urbanization has also posed a serious threat. (It is listed on Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora, where its export is prohibited if determined to be detrimental to the species' survival,

and is also protected in the States of New York and Pennsylvania.)

Maryland's fieldwork on the turtle in Baltimore County is almost complete, with 24 new population sites having been located. The turtle has been found in 51 sites in Carroll County, and 55 sites have been located in Harford County. Fieldwork is just beginning in Cecil County, where the search will continue in full force during May-September when the turtles are most active. Because the turtle appears to be more secretive than rare in Maryland, Taylor says a recommendation may be made to reclassify it after further study.

Other Studies

Research on the few bobcat populations remaining in the western part of the State was started only recently. The State is now documenting sightings and other evidence indicating bobcat habitat. In addition, the State is planning a cave survey and census of the Indiana bat (*Myotis sodalis*), a federally protected Endangered species which was known to exist in two caves in Washington and Garrett Counties in western Maryland as late as 1964. The bat is threatened throughout its range by habitat destruction, pesticide contamination, and disturbances of its nesting colonies.

Program Administration

The Nongame and Endangered Species Program is coordinated and administered by the Maryland Wildlife Administration, a division of the State Department of Natural Resources. Taylor supervises a project leader and five conservation assistants who are employed by the program for specific project assignments.

Maryland is assisted in its conservation efforts through contracts with the University of Maryland, the National Wildlife Federation, and other recognized authorities.

In the nongame area, the program is trying to improve and implement land use management techniques so that developers and property owners can enhance conditions for nongame wildlife. Other program activities include:

- support of a program to rehabilitate injured raptors
- a federally funded public information and education project on Endangered species
- advisory assistance on handling nuisance animal problems
- permit issuance (largely for scientific collecting)

The program is supported by the State through conservation funds which are provided out of general tax revenues.

Forest Service, BLM Set Policies on ES in California

The U.S. Forest Service has issued a directive establishing the agency's regional policy for the conservation of animal species listed as Endangered or Threatened in California by the U.S. Fish and Wildlife Service.

The directive also provides for the conservation of species listed by the State of California as rare or endangered, and for sensitive species that have been determined to be in need of special management on lands in the national forests.

Presently, there are 79 species within these four categories in the State—42 of them occurring in national forests. The latter 42 will receive top priority management, the agency said.

Copies of the directive may be obtained by writing to the Director, Fisheries and Wildlife, U.S. Forest Service, R-5, 630 Sansome Street, San Francisco, California 94111.

BLM Policy on Plants

The Bureau of Land Management (BLM) of the U.S. Department of the Interior has recently published a policy for conserving rare, threatened, or endangered plants on public lands in California. The policy was developed in

anticipation of a pending U.S. Fish and Wildlife Service ruling that would provide protection for approximately 1,779 U.S. plants, about 270 of which are known to occur in California.

Copies of the policy may be obtained from the Bureau of Land Management, Federal Office Building, 2800 Cottage Way, Sacramento, California 95825.

ESSA Report on Bobcat, Lynx, River Otter Nears Completion

A special working group of scientists is preparing a set of recommended criteria and guidelines for the U.S. Endangered Species Scientific Authority (ESSA) on regulating the export of bobcat, lynx, and river otter pelts.

A meeting of the group, chaired by L. David Mech of the North Central Forest Experiment Station, St. Paul, Minnesota, was held January 23-25 at New Orleans to prepare a draft report. The session, which was open to the public, sought to determine as specifically as possible the biological information and management programs needed to ensure that harvests of the three species will not be detrimental to their survival or to the maintenance of the species' normal roles in the environment.

Several representatives of state

wildlife agencies, conservation organizations, and user groups participated in a day-long discussion of the draft report on the third day of the meeting. They were asked to submit comments in writing for incorporation into the final report, which is scheduled for completion by April 1.

The National Science Foundation, the ESSA member that sponsored the New Orleans meeting, will publish the final report. Copies will be obtainable from William E. Sievers, Biological Research Resources Program, National Science Foundation, Washington, D.C. 20550.

In the meantime, ESSA expects to publish findings concerning the export of bobcat, lynx, and river otter pelts in the *Federal Register* during February. These findings will include the establishment of export quotas for the three species from several states, in line with ESSA's responsibility to determine that export will not be detrimental to the species' continued survival in the United States.

The three species are listed in Appendix II of the Convention on International Trade in Endangered Species and Wild Fauna and Flora. This category consists of species which, although not now necessarily threatened with extinction, may become so unless their trade is regulated and monitored.

Rulemaking Actions—January 1978

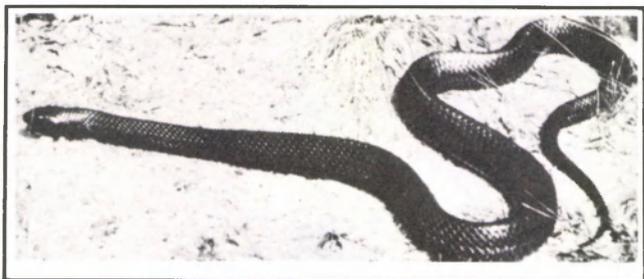


Photo by Robert H. Mount

Black market trade has depleted indigo snake in Florida

Eastern Indigo Snake

The eastern indigo snake (*Drymarchon corais couperi*) has been listed as Threatened in a final rulemaking issued by the Service (F.R. 1/31/78).

Scheduled to take effect on March 3, 1978, this ruling is substantially the same as the proposal published in the *Federal Register* on August 1, 1977 (see August 1977 BULLETIN).

The eastern indigo snake is in great demand by the pet trade, and its recent decline is attributable largely to commercial exploitation. Once found in the Southeast from Mississippi to South Carolina, the subspecies is now limited to Florida and Georgia. Threatened status will provide it with Federal protection throughout its historical range.

Comments on the original proposal were received from a total of 29 individuals, most of them associated with various governmental or private organizations. Full support for Threatened status was expressed by more than 20 of these respondents, including the Governors of Alabama and Mississippi.

Replying on behalf of the Governor of Florida, the director of the Florida Game and Fresh Water Fish Commission emphasized that, although the subspecies is protected under State law, the Florida population is being depleted by continued black market trading.

Several respondents commented on the adverse effects of so-called rattlesnake roundups conducted in the Southeast, which involve pouring gasoline down gopher tortoise burrows to drive out rattlesnakes. Unfortunately, many snakes, including the eastern indigo, are killed by this practice.

Some opponents suggested alternative approaches, including reliance on the prohibitions of the Lacey Act and on existing state laws, as well as prevention of habitat destruction and possibly the creation of substitute habitat. In addition, suggestions were made that Threatened status not be accorded the South Florida population.

After an indepth analysis of all comments received, the Service arrived at the following conclusions:

- Neither existing state laws nor the provisions of the Lacey Act would provide the eastern indigo snake with sufficient protection. Threatened status under the Endangered Species Act of 1973 will give the subspecies protection throughout its historical range and will prevent dealers from taking refuge in claims that their specimens come from unprotected populations.

- Under the 1973 act, it will be possible to formulate management plans for the subspecies, and money can be made available from the Land and Water Conservation Fund for habitat acquisition, although more data will have to be assembled before Critical Habitat can be determined.

- It is recognized that not every local population of the snake is threatened with becoming endangered; for example, some populations in South Florida are not in decline. However, when considered throughout its range, the snake does need to be designated as Threatened.

- The Service does not have the legal right to prohibit rattlesnake roundups, but it does believe that the Southeastern States involved should regulate the practice to provide added protection for the eastern indigo snake.

Leopard Darter

In a final rulemaking on the leopard darter (*Percina pantherina*), the Service has determined that the fish should be listed as Threatened and that part of its range should be designated as Critical Habitat (F.R. 1/27/78). The ruling takes effect on February 27, 1978.

Need for Protection

Formerly the leopard darter was found in large streams throughout the drainage basin of the Little River (a tributary of the Red River) in the upland areas of southeastern Oklahoma and southwestern Arkansas.

In recent years, the species has declined in both numbers and distribution as a result of habitat alteration, principally the construction of impoundments, and water quality deterioration.

Consequently, the leopard darter is now limited principally to the Little

River above Pine Creek Reservoir, Glover Creek, and Mountain Fork above Broken Bow Reservoir. In addition, the species has recently been discovered at three locations in the Cosatot River. However, as two of these locations are both below the newly completed Gillham Dam (the third is above the dam), they should not be considered as capable of supporting viable populations, in that downstream populations do not usually survive upstream impoundments.

The Glover Creek leopard darter population appears to be sufficiently strong and viable for the Service to favor listing the species as Threatened rather than Endangered. Glover Creek offers the species good water quality and good habitat—clear, swift shoal areas with gravel and gravel-and-sand bottoms.

However, the proposed Lukfata Reservoir impoundment on Glover Creek would be likely, in the Service's view, to result in the elimination of most of this population.

Comments on Proposal

A proposed rulemaking recommending Threatened status and Critical Habitat designation for the leopard darter was published in the *Federal Register* on July 6, 1976.

Subsequently, the Service received a total of 25 comments from various governmental and private organizations and individuals. The majority of these comments expressed general support for the proposal.

The U.S. Army Corps of Engineers recommended that action on the ruling be suspended pending extensive studies by the Fish and Wildlife Service and preparation of an environmental impact statement.

Conclusions

After reviewing all of the comments and biological information received on the leopard darter, the Service concluded that sufficient data are available to warrant listing the species as Threatened and that a portion of the fish's range should be designated as Critical Habitat as proposed, but modified in keeping with the comments of the Governor of Oklahoma, the U.S. Forest Service, and a professional biologist.

The Service also stated that the ruling "is not a major Federal action which would significantly affect the quality of the human environment within the meaning of Section 102(2)(C) of the National Environmental Policy Act of 1969, thus it does not require an Environmental Impact Statement."

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

- Bald eagle (modification of status in Lower 48 States)
- 27 snails (E, T)
- 6 butterflies (C.H.)
- Contra Costa wallflower and Antioch Dunes evening primrose (C.H.)
- 13 plants (E, T)
- Grizzly bear (C.H.)
- Gray wolf (reclassification to T in Minn., C.H.)
- 15 crustaceans (E, T)
- Whooping crane (C.H.)
- Black toad (T, C.H.)
- Mona boa (T, C.H.)
- Mona ground iguana (T, C.H.)
- New Mexican ridge-nosed rattlesnake (T, C.H.)
- 2 zebras (E)
- Socorro isopod (E)
- Little Kern golden trout (T, C.H.)
- (Greenback cutthroat trout (reclassification to T)

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.)
- 2 Hawaiian cave invertebrates (E, T)
- Leatherback sea turtle (C.H.)

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	36	227	263	2	17	19
Birds	68	144	212	2		2
Reptiles	10	46	56	4		4
Amphibians	5	9	14	2		2
Fishes	30	10	40	10		10
Snails		1	1			
Clams	23	2	25			
Crustaceans						
Insects	6		6	2		2
Plants	4		4			
Total	182	439	621	22	17	39

Number of species currently proposed: 111 animals
1,867 plants (approx.)

Number of Critical Habitats proposed: 41
Number of Critical Habitats listed: 24
Number of Recovery Teams appointed: 59
Number of Recovery Plans approved: 14
Number of Cooperative Agreements signed with States: 21

January 31, 1978

- 4 Alabama and Georgia fishes (E, C.H.)
- Puerto Rican whip-poor-will (C.H.)
- Laysan duck (C.H.)
- Bonytail chub (E)
- Razorback sucker (T)
- West African manatee (T)
- 20 Appendix I spp.
- Cui-ui (C.H.)
- Whooping crane (C.H.—additional areas)
- Illinois mud turtle (E, C.H.)
- Key mud turtle (E, C.H.)
- Plymouth red-bellied turtle (E, C.H.)
- 5 Ash Meadow plants (C.H.)
- 7 California and Oregon freshwater fishes (E, T)
- 23 foreign mammals and 1 bird (E)
- Light-footed clapper rail and yellow-shouldered blackbird (C.H.)

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

March 15 Hearing Set On Southeastern Fishes

The Service has announced that it will conduct a public hearing March 15 on its proposal to list four small fishes found in Alabama and Georgia as Endangered and to designate their Critical Habitat (F.R. 2/6/78).

The hearing will be held 9 a.m. to 3 p.m. and from 7 p.m. to 9 p.m. in the Cudworth Building Auditorium, 1919 8th Avenue South, at the University of Alabama, Birmingham. Because of wide interest in the proposal covering the Cahaba shiner, spring pygmy sunfish, pygmy sculpin, and goldline darter, the Service also has extended the comment period from January 30 to March 31. (See the December 1977 and January 1978 issues of the BULLETIN.)



ENDANGERED SPECIES TECHNICAL BULLETIN

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



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