



ENDANGERED SPECIES TECHNICAL BULLETIN

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



Photo by Douglas Gruenau

Furbish lousewort is threatened by development in St. John River Valley

Furbish Lousewort Among 13 Plant Taxa Newly Listed By Service For Protection

Eleven plant taxa—including the Furbish lousewort—have been listed as Endangered and two plant taxa as Threatened in a final rulemaking issued by the Service (F.R. 4/26/78). The ruling becomes effective May 27, 1978.

The Service said the action was taken primarily to protect the plants from threats of habitat destruction. They are found in 12 states and Canada.

The Furbish lousewort (in Canada sometimes called the St. John River wood-betany) (*Pedicularis furbishiae*) is a member of the snapdragon family endemic to the St. John river valley in northern Maine and New Brunswick, Canada. The plant was rediscovered in surveys performed in 1976 and 1977 for the U.S. Army Corps of Engineers in support of an environmental impact

statement for the proposed Dickey-Lincoln School Lakes project. A total of 880 individual plants in 21 colonies were located, with 350 individuals in 13 colonies found within the project's proposed impoundment area.

The Service said that, if the project is completed as planned, 40 percent of the known individuals of the Furbish lousewort would be extirpated. Only 160 would remain in the United States.

The remaining individuals are threatened by dumping, natural landslides, and construction and lumbering near the St. John River, both in Maine and New Brunswick. Until it was found in 1976 by Dr. Charles D. Richards of the University of Maine, the plant had not been collected since 1943 and was thought to be probably extinct.

(continued on page 7)

Improved Service Regulations Planned For Captive Wildlife

The Service has issued advance notice of a proposed rulemaking to eliminate unnecessary permit requirements relating to captive wildlife and thereby enhance both protection of wild populations of Endangered and Threatened species and propagation of captive populations (F.R. 4/14/78).

The purpose of the advance notice is to make public the alternative approaches presently under consideration and to solicit comments from all interested parties. Such comments should be submitted to the Service on or before June 13, 1978.

In publishing this notice, the Service emphasized that it does not intend to limit its consideration to the alternatives presented in the notice (and outlined below); rather, it is prepared to consider any approaches that may help make captive wildlife regulations more effective.

Need for Improved Regulations

As the Service has learned from practice, the detailed permit requirements and other regulations relating to activities involving captive wildlife, as stipulated under the provisions of the Endangered Species Act of 1973, have hampered zoos and other breeders in their efforts to breed rare wildlife in captivity.

In June 1977, the Service issued new rules for treating the captive populations of certain Endangered species as Threatened, thereby making it easier for zoos and other breeders to engage in interstate and foreign commerce involving these populations (see June 1977 BULLETIN). However, these rules have limited application in that only 11 species having captive, self-sustaining populations (CSSP's) in the United States have been determined to date, although others are currently under

consideration.

As a result, zoos and wildlife breeders have found that the existing regulations stemming from the 1973 act have interfered with their efforts to propagate both Endangered and Threatened species. The need to obtain permits has delayed transfer of surplus animals or breeding stock among institutions.

Alternative Approaches

In considering the most effective ways of revising the current regulations to maintain full protection of wild populations while encouraging propagation of captive populations, the Service has identified three general approaches:

1. Redetermination of status.
2. Issuance of special rules.
3. Extended use of the similarity-of-appearance clause.

(continued on page 5)

Regional Briefs

The Endangered Species Program regional staffs report the following recent developments in their areas:

Region 1. A first group of cui-ui (*Chasmistes cujus*) has successfully negotiated the fishway built in 1976 from Pyramid Lake, Nevada, to spawn in the Truckee River. Cui-ui have been unable to leave the lake to spawn in recent years because of a low water level, caused by diversion of Truckee River waters for irrigation. Some larvae from this year's production will be returned to the Pyramid Lake Hatchery for artificial propagation as part of the cui-ui recovery plan.

An additional population of Santa Cruz long-toed salamanders (*Ambystoma macrodactylum croceum*) has been discovered in the Bennett and McCluska slough areas south of Santa Cruz, California. The two sites are tributaries to Elkhorn Slough.

Region 2. A total of 3,600 Houston toads (*Bufo houstonensis*) have been hatched at the Houston Zoo. This is nearly three times the known population in the wild. Twenty-five hundred are being released back into the capture site to supplement the wild popu-

lation. The remainder will be held at the zoo for release next spring.

The squawfish (*Ptychocheilus lucius*) artificial propagation program at Willow Beach National Fish Hatchery in Arizona has acquired 11 adults of the species which were captured in the Colorado River. An additional 10 to 11 squawfish were expected to be captured in May from the Green River, Utah, for the program.

A total of eight young have been hatched from four of the five bald eagle nests monitored along the Salt and Verde rivers in Arizona. This is a record production for the population.

Region 4. The Florida Manatee Recovery Team, inactive for the past four years, has been realigned and the leader position filled by John Oberheu of the Service's Jacksonville area office. Peter Pritchard, vice president for science and research of the Florida Audubon Society, has been added as a team member.

Region 5. Brian Kinnear has joined the regional staff as a specialist in section 7 consultations. Regional staff members recently have been undergoing training in section 7 regulations and responsibilities.

Region 6. An interagency task force has been formed by the Service, the

Bureau of Land Management, and the National Park Service in Denver to integrate field data on proposed Endangered and Threatened plants in the region. The group also provides information sharing on plant protection.

A memorandum of agreement has been negotiated with the Bureau of Land Management for the Denver Wildlife Research Center to provide black-footed ferret (*Mustela nigripes*) surveys on extensive coal leasing areas in Wyoming.

Alaska Area. Twenty-four Aleutian Canada geese (*Branta canadensis leucopareia*) captured at the Castle Rock, California, wintering grounds have been brought to Amchitka Island. These birds will be released on Agattu Island this summer with some captive-reared Aleutian Canada geese from Amchitka. It is hoped they will serve as "guide" birds during the fall migration to California, and that they will return next year to Agattu and become a nesting population there. Buldir Island currently is the only natural nesting area for the goose.

New Publications

The Colorado Division of Wildlife's Nongame Section staff has published a series of four reports that are available for distribution. These reports are as follows:

Essential Habitat for Threatened or Endangered Wildlife in Colorado, covering fish, bird, and mammalian species. 84 pp; price, \$3.00.

Colorado Bird Distribution Latilong Study, a survey of 405 species. 62 pp; price, \$2.00.

Colorado Mammal Distribution Latilong Study. 20 pp; price, \$1.00.

Colorado Reptile & Amphibian Distribution Latilong Study, covering a total of 89 species. 20 pp; price, \$1.00.

The publications are available from the Nongame Section, Colorado Division of Wildlife, 6060 Broadway, Denver, Colorado 80216. Checks should be made payable to the Colorado Division of Wildlife Fund #5033X.

The proceedings of the 1976 and 1977 symposia of the Desert Tortoise Council are now available. They may be ordered at a cost of \$5.00 per volume from the Desert Tortoise Council, 350 Golden Shore, Long Beach, California 90802.

Correction

In the April 1978 issue of the BULLETIN, the table on page 7 should have listed the minimum breeding population of the river otter in Minnesota as 2,150-7,000. Also, footnote 13 in the table should have read the *untrapped*, instead of the untagged part of the New York and Minnesota river otter population.

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

Lynn A. Greenwalt, *Director*
(202-343-4717)

Keith M. Schreiner,
*Associate Director and Endangered
Species Program Manager*
(202-343-4646)

Harold J. O'Connor,
Deputy Associate Director
(202-343-4646)

John Spinks, *Chief,
Office of Endangered Species*
(202-343-5687)

Richard Parsons, *Chief,
Federal Wildlife Permit Office*
(202-634-1496)

Clark R. Bavin, *Chief,
Division of Law Enforcement*
(202-343-9242)

TECHNICAL BULLETIN STAFF
Dona Finnley, *Editor*
Clare Senecal, *Assistant Editor*
(202-343-5687)

Regional Offices

Region 1, Suite 1692, Lloyd 500 Bldg.,
500 N.E. Mulnomah St., Portland, OR
97232 (503-231-6118): R. Kahler Mar-
tinson, *Regional Director*; Edward B.
Chamberlain, *Assistant Regional Di-
rector*; David B. Marshall, *Endangered
Species Specialist*.

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

Region 2, P.O. Box 1306, Albuquerque,
NM 87103 (505-766-2321): W. O. Nel-
son, *Regional Director*; Robert F. Ste-
phen, *Assistant Regional Director*;
Jack B. Woody, *Endangered Species
Specialist*.

Region 3, Federal Bldg. Fort Snelling,
Twin Cities, MN 55111 (612-725-3500):
Jack Hemphill, *Regional Director*; Del-
bert H. Rasmussen, *Assistant Regional
Director*; James M. Engei, *Endangered
Species Specialist*.

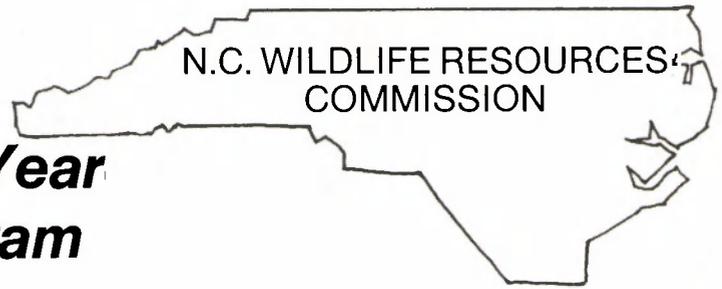
Region 4, P.O. Box 95067, Atlanta, GA
30347 (404-881-4671): Kenneth E.
Black, *Regional Director*; Harold W.
Benson, *Assistant Regional Director*;
Alex B. Montgomery, *Endangered
Species Specialist*.

Region 5, Suite 700, One Gateway Cen-
ter, Newton Corner, MA 02158 (617-
965-5100): Howard Larsen, *Regional
Director*; James Shaw, *Assistant Re-
gional Director*; Paul Nickerson, *En-
dangered Species Specialist*.

Region 6, P.O. Box 25486, Denver Fed-
eral Center, Denver, CO 80225 (303-
234-2209): Harvey Willoughby, *Re-
gional Director*; Charles E. Lane, *As-
sistant Regional Director*; John R.
Davis, *Endangered Species Specialist*.

Alaska Area, 1101 E Tudor Rd., Anchorage,
AK 99057 (907-265-4864): Gordon
W. Watson, *Area Director*; Dan Ben-
field, *Endangered Species Specialist*.

North Carolina Shaping 5-Year Endangered Species Program



Major research and management projects are underway in North Carolina to assist the Endangered red-cockaded woodpecker (*Picoides borealis*),* brown pelican (*Pelecanus occidentalis*), and American alligator (*Alligator mississippiensis*) as part of a five-year Federal assistance program recently approved under a cooperative agreement between the State and the U.S. Fish and Wildlife Service.

The State's Endangered Species Program, which is scheduled to receive \$180,000 in Federal assistance in fiscal year 1978, projects a total spending of \$1,110,000 over the five-year period. Of this amount, the State will contribute \$370,000 and the Federal Government \$740,000.

Prior to initiation of this program, the North Carolina Wildlife Resources Commission had maintained a number of projects to help endangered and nongame species. These projects received minimal funding, however, because the commission was financed almost entirely by revenues from hunting and fishing licenses. Although consideration is being given to requesting State general fund monies to support this program, at the present time the State's share continues to come from this licensing revenue, which totals about \$7 million a year. The commission also receives more than \$1 million in Federal aid receipts through the Pittman-Robertson and Dingell-Johnson programs.

In 1975, the general assembly authorized a public contribution program to help expand the endangered and nongame species projects then in progress. Called the Carolina Conservationist, this program has produced nearly \$3,750 through contributions since being implemented in July 1976, and it has generated public support for additional nongame and endangered species conservation measures. The program is administered by the Division of Information and Education.

*In 1976, a committee of the American Ornithologists Union voted to change the scientific name of the red-cockaded woodpecker from *Dendrocopos borealis* (as originally indicated on the U.S. List of Endangered and Threatened Species) to *Picoides borealis*.

Listed Species

Only federally listed Endangered and Threatened animal species are now officially designated by the N.C. Wildlife Resources Commission. In addition to the red-cockaded woodpecker, American alligator, and brown pelican, they include the American peregrine falcon (*Falco peregrinus anatum*), Arctic peregrine falcon (*Falco peregrinus tundrius*), Bachman's warbler (*Verimivora bachmannii*), bald eagle (*Haliaeetus leucocephalus*), eastern cougar (*Felis concolor cougar*), gray bat (*Myotis grisescens*), Indiana bat (*M. sodalis*), ivory-billed woodpecker (*Campephilus principalis*), Kirtland's warbler (*Dendroica kirtlandi*), leatherback turtle (*Dermodochelys coriacea*), manatee (*Trichechus manatus*), shortnose stur-

geon (*Acipenser brevirostrum*), and spotfin chub (*Hybopsis monacha*).

(All other nongame species also receive State protection, unless special seasons are authorized for harvest or other special management purposes.)

Last December, the U.S. Fish and Wildlife Service proposed adding three more fish found only in North Carolina to the Federal Endangered list. They are the Waccamaw darter (*Etheostoma perlongum*), Waccamaw killifish (*Fundulus waccamensis*), and the Waccamaw silverside (*Menida extensa*).

Candidate Species

Many more candidate species of vertebrates and plants have been identified by wildlife biologists as in need of special protection by the State. In 1975, a symposium conducted by the North Carolina Museum of Natural History assessed the status of wildlife and plants in the State, and determined that a substantial number were in jeopardy. Of the State's 663 species and subspecies of vertebrate fauna, 33 taxa were considered to be endangered, 28 threatened, 84 of special concern, and 51 of additional concern (but so little known that they had to be classed as "status undetermined").

In the plant category, symposium botanists identified 91 species as of "primary concern" and 319 of additional concern. About 12 percent of the State's nearly 3,400 plant taxa were found to be in jeopardy. (At the present time, there is no State agency having clear-cut authority to establish regulations and programs on behalf of endangered or threatened plant species.)

Thus, it is expected that the base of the State program will broaden considerably when sufficient data are acquired to warrant the listing of resident species for State protection.

Program Direction

The director of the N.C. Wildlife Resources Commission has placed the endangered animal species program under the Interagency Wildlife Coordination Section of his office. This section, headed by Frank B. Barick and budgeted at \$218,000 for the current fiscal year, serves the program administratively. Program direction is pro-

(continued on next page)



Drawing by Duane Raver

North Carolina is coordinating several research and management projects to conserve the Endangered red-cockaded woodpecker. This print was used in Carolina Conservationist fund drive.

vided by an Endangered Species Advisory Committee, which includes wildlife biologists from universities in the State as well as representatives of conservation organizations (the Audubon Society and North Carolina Wildlife Federation). In addition, coordination with other State and Federal agencies is effected through an Endangered Species Interagency Task Force, with representatives from 9 State agencies and 12 Federal agencies.

The advisory committee is responsible for developing recommendations to the wildlife commission on designating species as endangered or threatened, research program elements and priorities, and restoration projects, plus the development of policy, regulations, and appropriate legislation. Recommendations prepared by the interagency task force regarding elements of the program must be approved by the advisory committee before being implemented.

By involving all agencies and interests concerned with the environment and wildlife in the administration function, the program is designed to identify potential areas of conflict between the actions of individual agencies and endangered species—and then work toward a solution. Some of the Federal assistance funding has been earmarked to support this coordinating function of the program.

Once restoration procedures are developed by the coordination section, Barick says, "they are implemented through the commission and other concerned agencies. Among the first elements in the restoration program is protection from taking and commercialization in accordance with regulations adopted by the commission and enforced by wildlife enforcement officers. Other measures include habitat acquisition, habitat management, live-trapping, and transplanting. These measures would normally be conducted by the commission's Divisions of Game and Inland Fisheries. In addition, other public land-owning agencies would participate in these efforts."

Red-cockaded Woodpecker

State program coordination is well illustrated in the projects to aid the red-cockaded woodpecker. The commission, through its Division of Game (and partially supported by a U.S. Fish and Wildlife Service Federal aid grant of \$70,000), has embarked upon a management plan for red-cockaded woodpecker colonies inhabiting the State-owned Sandhills Game Land in the southeastern region of North Carolina.

The game land is comprised of 57,250 acres of noncontiguous tracts and is believed to contain a woodpecker population of between 160 and 400 birds, which nest, for the most part, in mature longleaf pine trees (*Pinus pa-*

lustris). The habitat is generally characterized by a thick understory of turkey oak (*Quercus laevis*) and wiregrass (*Aristida stricta*) ground cover. Biologists have noted a correlation between the frequency of the woodpecker and the frequency of burning the understory to remove vegetation that obscures nesting cavities in the pines.

Under guidelines being developed for the management plan, nesting trees would be identified and protected from timber cutting. In addition, a 200-acre pine "support stand" or feeding area would be maintained adjacent to colony areas. All colony areas will be burned every three years after all vegetation has been cut away from around the base of each nesting cavity tree.

The plan also would preserve numbers of mature pines (60 years or older) in the timber rotation program as habitat for potential expansion of the woodpecker population.

At the same time the management plan is being put into effect, the commission also is launching a number of research projects with \$95,600 provided under its fiscal year 1978 Endangered Species Program grant from the Service. These projects include an evaluation of the effects of controlled burning on woodpecker colonies within the Sandhills Game Land and a

Propagating Loggerheads at Camp Lejeune

The U.S. Marine Corps Camp Lejeune training base on North Carolina's coast, through the work of the base ecologist, Julian Wooten, is becoming a prime production center for the Atlantic loggerhead sea turtle (*Caretta caretta*), which has been proposed for Threatened status.

For the past four summers, Wooten has been observing loggerheads as they crawl across Onslow Beach—long used by Marine recruits to practice amphibious assaults—to lay their eggs. He noted that about 90 percent of the 40 to 50 nests were being destroyed by such predators as foxes, raccoons, opossums, and feral cats.

In 1975, Wooten began placing protective wire cages over every turtle nest (each loggerhead lays about 100 eggs) and has succeeded in keeping most of them intact. Where the nesting site was producing at most only a few hundred loggerhead hatchlings, production has jumped to more than 2,000 a year. He now estimates that about 80 percent of all eggs laid on the beach hatch.

Wooten also assists the newly hatched turtles from the protected nests and releases them into the surf. Adult turtles are tagged to collect data on their migration habits.

study of timber management practices in this and other habitat areas.

While the status of the woodpecker remains undetermined, earlier studies have indicated that several hundred colonies of birds may exist in eastern and southern portions of North Carolina. Surveys will be performed to map the location of colonies throughout the State, and researchers also will attempt to determine population trends while studying the structure and productivity of nesting populations.

Habitat types preferred by red-cockaded woodpeckers also will be characterized, in hopes of gathering data needed to recommend Critical Habitat designation for the bird in North Carolina. Upon completion of the research, a final report will be prepared and management recommendations formulated to assist in preparing a final recovery plan for the woodpecker, which ranges from Virginia to Texas.

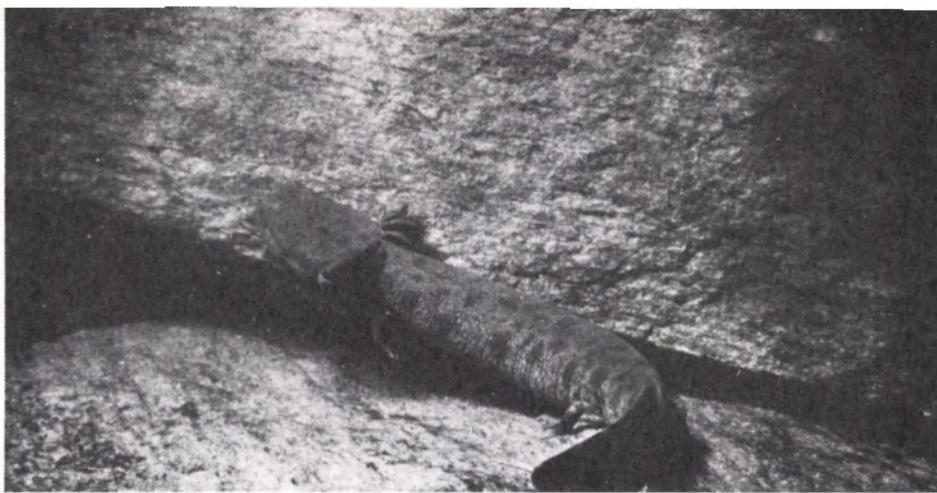
Brown Pelican

A colony estimated at 200 brown pelicans nests on Shell Island, a small sandbar in Pamlico Sound near Ocracoke, North Carolina—the most northerly breeding colony of the species in the United States. Ornithologists have been puzzled as to why the colony limits itself to this one island, even though there is suitable habitat between the island and the next breeding colony about 300 miles south at Cape Romain National Wildlife Refuge near McClellenville, South Carolina.

With assistance from the Service, North Carolina's researchers will attempt to answer this question and determine ways that the bird may be induced to occupy other sites, perhaps similar islands created for this purpose from sand dredged to maintain coastal shipping channels. Mortality factors of the colony, which has remained stable for the past decade, also will be studied as well as food habits and other basic life history elements.

Alligator Investigations

Coastal swamplands are being studied to learn the State distribution and population of alligators. While the species is known to occur as far north as Dare County, North Carolina, the status of the species has not been described in the State. In a preliminary investigation last year, Manley Fuller, a North Carolina State University graduate student, captured and tagged about 52 alligators in and around Lake Ellis Simon. His research will continue this summer in an effort to establish population indices, investigate habitat preferences, and acquire information on the species' growth rates. Fuller's past work has been supported by the university, the National Wildlife Federation, and the North Carolina Museum of Natural History.



N.C. Wildlife Resources Commission photo by Ken Taylor

The Neuse River waterdog, a salamander, may be a candidate for Federal protection.

The commission's studies will provide basic information on breeding, feeding, wintering habitats, limiting factors, and other data applicable to management procedures.

Additional Studies

In coming months, as arrangements for studies are completed with university contractors, the commission expects to launch research projects on the Lake Waccamaw fishes, bobcat, river otter, Neuse River waterdog, peregrine falcon, bald eagle, eastern cougar, Indiana bat, gray bat, and Florida manatee. The latter five are Endangered species which are extremely rare in the State, with only a few sightings reported in recent years. There has been no confirmed sighting of the eastern cougar, except for one hair sample found on a fence three or four years ago. The cougar was extirpated east of the Mississippi in the early part of this century. But in recent years there has been an increasing number of reports of the cat sighted in eastern seaboard states, which some biologists believe may indicate a return of the species to its historic range.

Neuse River Waterdog

A preliminary study which was recently supplemented with \$1,400 in Carolina Conservationist funds concerns the Neuse River waterdog (*Necturus lewisi*), an endemic salamander known to exist in the drainages of North Carolina's Neuse and Tar Rivers. The North Carolina Museum of Natural History has proposed a follow-on study to obtain data on the salamander's status to determine if Federal listing of the species is warranted.

The waterdog has been designated by the museum as a species of "special concern" because of habitat destruction, particularly along the Neuse River. A portion of its habitat appears to be imminently threatened by a proposed U.S. Army Corps of Engineers dam near Raleigh.

Educational Programs

Wildlife in North Carolina, the commission's monthly magazine, has been utilized as the agency's primary educational tool in behalf of rare and endangered species. In addition to periodic articles on the subject which appear throughout the year, the July issues of this publication carry a general rare and endangered species theme with related program reports, articles, and other information.

The Carolina Conservationist program was established to supplement educational efforts as well as a vehicle for channeling funds through the commission for endangered species research. With the assistance of Carolina Conservationist and Federal grant-in-aid funds, the State is now embarking on an accelerated public information program. Under the direction of A. Sidney Baynes, chief of the wildlife resources commission's Division of Information and Education, a television spot announcement is being produced on State and national conservation efforts, with emphasis on the problem of environmental degradation. Thus far, the Carolina Conservationist has purchased film strips on endangered species from the National Wildlife Federation, prepared posters and prints of original paintings of the brown pelican and red-cockaded woodpecker, and mailed out numerous fliers on the State program. The agency is preparing a slide/tape program and a publication on North Carolina's endangered species for public distribution.

"We've compared our program to those in other states," Baynes says, "for what we want is a good, sound educational program that appeals to lots of people. Such programs are not measured by the revenues they generate, but often in more intangible terms. We have had to spend more money than we've taken in in this program, but it doesn't matter as long as we're helping to educate the public about the plight of our endangered and threatened species."

Status redetermination would involve determining whether or not certain captive populations may constitute separate species under the terms of the 1973 act and, if so, whether or not these species could be reclassified to the Threatened category or declassified altogether.

The Service believes that reclassification or declassification should be considered only for those species in which wild populations are and will continue to be sufficiently protected.

In particular, the Service believes that status changes should not be made on the assumption that the Convention on International Trade in Endangered Species of Wild Fauna and Flora will provide compensatory protection. Although many of the species listed under the 1973 act are also listed in the appendixes to the Convention, changes in the appendixes are subject to international agreement irrespective of U.S. approval or disapproval. In addition, the Service has had cause to question the validity of some foreign documents issued in response to Convention requirements.

Issuance of special rules would be based on the fact that, if captive populations of Endangered species are reclassified as Threatened, it is permissible under the 1973 act to establish special rules for those populations.

Any such rules, in the Service's view, must be compatible with and conducive to conservation of both wild and captive populations. In addition, the Service believes it is essential to make sure that there is a reduction or elimination of the current permit requirements for many of the normal practices in captive species propagation.

In keeping with these goals, the Service has identified several specific types of special rules that warrant consideration. These include:

- requiring people holding captive individuals to keep records and report transactions to the Service
- establishing regulations under which taking (as defined in the 1973 act) and other activities that are now allowed by permit for Threatened species would be allowed for captive populations without the need for permits.

Extended use of the similarity-of-appearance clause of the 1973 act would involve a determination that a specific captive population is no longer Endangered or Threatened biologically but should still be treated as such to protect the wild population.

Although a similarity-of-appearance listing carries the same prohibitions as do Endangered and Threatened status, the application requirements and issuance criteria for permits are less detailed than those for other permits.

Rulemaking Actions – April 1978

Protection Sought For Bonytail Chub, Razorback Sucker

The Service has issued a proposed rulemaking to determine the bonytail chub (*Gila elegans*) as Endangered and the razorback sucker (*Xyrauchen texanus*) as Threatened (F.R. 4/24/78).

Both fishes are recommended for listing under the Endangered Species Act of 1973 because their populations have been greatly reduced, primarily as a result of habitat alteration and destruction, and because prospective habitat modification threatens their continued existence.

The two species are found only in the Colorado river system, and their known range covers portions of Arizona, California, Colorado, Nevada, New Mexico, and Utah.

The Service has set the following deadlines for submission of comments on this proposed ruling: June 26 for the public, and July 24 for the Governors of the six States involved.

Bonytail Chub

The historic range of the bonytail chub encompasses both the upper and lower basins of the Colorado river system. The fish apparently prefers to live in eddies adjacent to the swiftly flowing waters of the system's turbid mainstream rivers.

The lower basin populations have been almost extirpated by habitat loss stemming from river impoundment and diversion. Much of the lower basin now consists of reservoirs and cold tailwaters.

Although large adult bonytails have been found in such reservoirs as Lake Mead and Lake Mohave, and spawning has also been observed, no young have been discovered; consequently, these reservoir populations probably will disappear as the fish grow older and die.

The cold tailwaters do not support bonytail populations since this species does not spawn when the water temperature is under 65° F. Elsewhere in the lower basin, primarily in the Gila river system, water diversion for irrigation projects has caused a loss of instream flows and consequently of bonytail habitat.

Bonytail chub decline in the lower basin may also have been hastened by competition with introduced species of fish, which now outnumber native fishes in the Colorado river system as a whole. Some biologists believe that

exotic shiners prey on larval bonytails and that bass, sunfish, and catfish prey on young bonytails.

In the upper basin, bonytail populations have declined greatly during the past two decades. For example, on the Green River above Flaming Gorge Dam, the decline started after the reservoir became stabilized near its planned capacity in 1966. Since then, there has been no record of bonytail reproduction in the reservoir.

Razorback Sucker

Once abundant enough to be caught and sold as food by the early settlers, the razorback sucker is native to the large rivers of both the upper and lower basins. Its preferred habitat appears to be slow-flowing backwater areas, where it feeds on bottom detritus and possibly on plankton.

In the lower basin, the razorback sucker is missing from the cold tailwaters of the high dams. Consequently, the species is no longer found in the Grand Canyon stretch of the Colorado River.

Although the razorback does occur in the lower basin's reservoirs, it is questionable as to whether these populations will prove to be self-sustaining. Evidence suggests that, after dam

closure, the adult population in a reservoir persists for about 30 years (roughly the maximum age of the fish) and then disappears.

At present, razorbacks are abundant in Lakes Mead, Mohave, and Havasu; however, although spawning has been observed, no juveniles have been discovered. Nevertheless, some individual fishes appear to be young enough to suggest that at least some recruitment has occurred since closure of the dams. At issue, therefore, is whether or not such recruitment will prove to be sufficient to maintain the reservoir populations on a long-term basis.

Razorback distribution in the upper basin does not indicate much lessening of the fish's original range. However, upper basin populations are declining as a result of habitat alteration and possibly competition with and predation by introduced species. Furthermore, although most experts believe that some recruitment is occurring, no juvenile razorbacks have been found in recent surveys and the future of the upper basin populations remains uncertain.

The proposed rulemaking includes special provisions that would allow the taking of razorback suckers in accordance with State law.

Little Kern Golden Trout

In a final rulemaking issued by the Service, the Little Kern golden trout (*Salmo aguabonita whitei*) has been listed as Threatened and its entire range (in Tulare County, California) has been designated as Critical Habitat (4/13/78).

The ruling, effective May 15, recognizes that the species is threatened principally by hybridization with rainbow trout. The Service also noted its concern that the quality of water in the Little Kern river system could possibly deteriorate as a result of uncontrolled use of off-road vehicles, improper road construction, careless logging activities, pollution from mining, and livestock overgrazing in the system's drainage basin.

Comments on Proposal

The original proposal was published in the *Federal Register* on September 1, 1977 (see October 1977 BULLETIN).

Subsequently, the Service received generally supportive comments from the State of California, the U.S. Forest Service, two national conservation groups, one local conservation group, one natural history museum, and six private citizens.

In addition, the State of California identified several specific types of threats to water quality in the Little Kern river system, and the Forest Service suggested a minor change in the Critical Habitat boundary and a correction of the reference to forestry practices. All these suggestions were incorporated into the final ruling.

Greenback Cutthroat Trout

According to a final rulemaking issued by the Service, the greenback cutthroat trout (*Salmo clarki stomias*) has recovered to the point where it can be reclassified from Endangered to Threatened (F.R. 4/18/78).

(continued on next page)

Found only in Colorado, the fish was originally listed as Endangered primarily because of extensive hybridization with introduced trout and widespread habitat alteration. In recent years, the efforts of the Federal Government and the State of Colorado have resulted in reduction of introduced trout and successful reintroduction of the Endangered subspecies within its historic range. Consequently, the greenback cutthroat trout no longer faces imminent extinction.

The new ruling, effective May 18, includes a special regulation allowing the fish to be taken by sports fishermen in accordance with Colorado State law. There is evidence that such a regulated take in certain areas may be beneficial to the subspecies.

Comments on Proposal

The Service's original proposal to reclassify the greenback cutthroat trout was published in the *Federal Register* on September 26, 1977 (see October 1977 BULLETIN). Subsequently, the U.S. Forest Service, the National Park Service, and the Division of Wildlife of the Colorado Department of Natural Resources (responding for the State) all concurred with the proposal.

One national conservation organization submitted comments expressing concern over the special regulation allowing a regulated take. However, the Service decided to leave the original proposal unchanged, in that it carries sufficient provisions for the State of Colorado to effectively regulate sport fishing of the subspecies.

Regulations Revised On Threatened Species

The Service has taken final action to correct an omission in previously published regulations, thereby assuring their application to Threatened species as well as to Endangered species (F.R. 4/28/78).

Promulgation of this special rule was deemed necessary to correct regulations published in the May 11, 1976, *Federal Register*, which should have included the following wording as part of an amendment to § 17.31(a): "all of the provisions in § 17.21 shall apply to threatened wildlife, except § 17.21(c) (5)." Inclusion of the clause was important to clarify a difference in treatment between Endangered and Threatened species under state cooperative agreements with the Service.

Sixteen comments were received from the public on the proposed corrective ruling, which was published by the Service on September 16, 1977 (see October 1977 BULLETIN). Only one organization, which interpreted the proposal as a new regulation rather than a correction, opposed the ruling.

Plants (continued from page 1)

The 13 plants listed in the rulemaking were among a total of 1,783 proposed for Endangered status in the June 16, 1976, *Federal Register*. The proposal was a subject of four public-hearings conducted by the Service in 1976 (see the September 1976 BULLETIN) and elicited 425 comments.



Photo by F. G. Meyer, National Arboretum
Virginia round-leaf birch

Last year four plants in the proposal—all from San Clemente Island, California—were listed as Endangered (see the September 1977 BULLETIN). An additional 1,404 native plants remain under review; all but four were included in a Smithsonian Institution report covering 3,187 vascular plants, which was published as a notice of review in 1975 (F.R. 7/1/75).

Endangered Plants

In addition to the Furbish lousewort, the following plants were determined to be Endangered in the current final rulemaking:

Hairy rattleweed (*Baptisia arachnifera*). A member of the pea family, the rattleweed is known from southern Wayne County to northern Brantley County in Georgia—an area where pines are clear-cut for timber and pulp. The Service said the plant appears to be capable of surviving the clear-cutting, but subsequent methods for site preparation and replanting of pines have greatly reduced the distribution of the species.

Virginia round-leaf birch (*Betula uber*). This birch, which had been regarded as probably extinct since 1914, was rediscovered in 1975 along Cressy Creek, in Smyth County, Virginia. Only 14 mature trees, 1 three-stemmed

shoot, and 21 seedlings have been found, making the species extremely vulnerable. Since their rediscovery, two trees have died, several seedlings have been removed for scientific purposes and several more stolen; all but two of the remaining seedlings were damaged by vandals. Landowners have erected fences around the trees to protect them. A propagation program to provide a cultivated source for the species has been started at the National Arboretum, which is located in Washington, D.C.

Santa Barbara Island liveforever (*Dudleya traskiae*). This member of the stonecrop family is endemic to the is-



Photo by Reid Moran
Santa Barbara liveforever

land, and is under threat from introduced European hares. The species had not been collected since 1968 when, in 1975, several plants were found regenerating from stubs gnawed to the ground by the hares. Subsequently, a few hundred more plants were discovered on the face of a cliff, where they are protected from the hares. The Service said, however, that the eventual recovery of the liveforever, as well as other endemic plants on the island, will depend upon continued efforts of the National Park Service to control the hare population.

Eureka evening primrose (*Oenothera avita* ssp. *eurekensis*) and **Eureka dune grass** (*Swallenia alexandrae*). The populations of these plants are restricted largely to the base and slopes of the Eureka Dunes, a unique formation of sand in California's Inyo County, which in recent years has been used for off-road vehicle recreation. The Service said the survival of the two taxa will depend upon strict enforcement of a Bureau of Land Management order in late 1976 closing the dunes to off-road vehicles (see the March 1977 BULLETIN).

Antioch Dunes evening primrose (*Oenothera deltoides* ssp. *howellii*) and **Contra Costa wallflower** (*Erysimum*

(continued on next page)

capitatum var. *angustatum*). These two flowers are endemic to the Antioch Dunes, which formerly covered approximately 500 acres of the Sacramento-San Joaquin River's south bank in Contra Costa County, California. Agricultural and industrial activities have reduced the original dunes by 90 percent. Only 28 Contra Costa wallflowers were found during a February 1977 visit to the dunes by Dr. Paul Opler of the Service's Office of Endangered Species.

Persistent trillium (*Trillium persistens*). All of the populations of this member of the lily family are found within four miles of each other in the Tallulah-Tugaloo river system in Rabun and Habersham Counties, Georgia, and Oconee County, South Carolina. Because of its restricted distribution, the Service believes the species could be adversely affected by development, particularly in Tallulah Gorge and surrounding ravines, where most of the plants are found. Silvicultural practices at the edge of the gorge also could have an adverse impact on the plant's habitat. Efforts are being made to propagate the species, so that an alternate source will be available for collectors.

Hawaiian wild broad-bean (*Vicia menziesii*). The major threat to this member of the pea family appears to be feral animals which feed on the beans. Tagging may also be a problem. Because only small populations of the species have been located on Mauna Loa on the Island of Hawaii, its continued existence is regarded as extremely precarious. The wild broad-bean is thought to contain L-dopa, a chemical used in the treatment of Parkinson's disease, and also has potential as an ornamental.

Texas wild-rice (*Zizania texana*). This aquatic grass is restricted to a small section of the upper San Marcos River in Hays County, Texas. The plant has been threatened by the suppression of aquatic vegetation in Spring Lake and parts of the park system of the city of San Marcos—activities which recently have been halted. (The debris resulting from the mowing and ploughing of vegetation floated downstream and entangled in the inflorescences of Texas wild-rice, dragging the plants under water and apparently precluding sexual reproduction.) Commercial utilization and pollution from sewage in the river may have an adverse effect on the species' habitat. The Service said recovery of the grass will depend upon conservation of its habitat and research to identify the factors preventing reproduction.



Photo by Robert Read

Northern wild monkshood

Threatened Plants.

The following plants were determined to be Threatened:

Northern wild monkshood (*Aconitum noveboracense*). This member of the buttercup family is now known in only 14 colonies: one in Ulster County, New York; one in Summit County, Ohio; one each in Allamakee, Clayton, and Jackson Counties, Iowa; one in Richland County, two in Sauk County, and six in Vernon County, Wisconsin. The wildflower's disjunct distribution probably dates from the Ice Age when glaciers apparently destroyed intervening populations. The surviving colonies generally are restricted to moist soil pockets at the bottom of cliffs and many are vulnerable to extirpation. The New York colony parallels a road and would be adversely affected if the road is widened. The Ohio colony is in an urban park where it has been surrounded by construction projects. The Jackson County, Iowa, colony is in a private pasture. Construction of the La Farge Dam in Wisconsin would destroy three to five of the colonies in the State, depending upon the level of impounded water. Three of the Wisconsin colonies are in protected areas, as is the one in Clayton County, Iowa. About 475 individual plants are located in these four areas.

Rydberg milk-vetch (*Astragalus perianus*). The Smithsonian Institution report in 1975 said this member of the pea family was possibly extinct because it had last been collected near Marysvale in Piute County, Utah, in 1905. But in 1975, the plant was found in Piute and Garfield Counties, Utah, in areas used for sheep grazing. The Service said the Piute County popula-

tion of about 100 plants is in the Fish Lake National Forest of the Tushar Mountains (at an altitude of 10,000 feet) and could be affected by temporary road construction to service mineral exploration. Road maintenance also could jeopardize the second population on Mount Dutton, which is situated in Dixie National Forest at an altitude of 10,600 feet.

Conflict With Development

The Service noted that several proposed Federal projects or activities could potentially jeopardize the newly listed plants. But the Service said it believes all of the species can be conserved with only minor modifications in the use of their habitat, and at little expense, or simply by recognizing their existence in management of their habitats. The Service anticipates that any conflicts can be resolved through consultations with involved Federal agencies under section 7 of the Endangered Species Act of 1973.

Comments on the Proposal

This final rulemaking also summarized the 425 general comments received on the proposal of June 16, 1976. The Service said less than one percent opposed conservation of Endangered and Threatened plants. Many of those favoring conservation supplied additional data on the plants in the proposal as well as on other plants that may be possible candidates for listing.

More than 35 individuals recommended that the Service propose all of the 1,783 plants in the review for inclusion on the appendixes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. The Service is considering proposing those U.S. plants that meet the Convention's criteria and would benefit from such a listing.

Some concern was expressed in the comments as to whether the Service has authority under the law to list plant varieties as well as plant subspecies and full species as Endangered or Threatened. The Service said that Congress has clearly indicated in section 3(11) of the act defining the term "species" that infraspecific taxa should be included and conserved. As the rank variety has been used by botanists as the major infraspecific subdivision for many plants, the Service said, it appears appropriate to consider plant varieties for determination as Endangered or Threatened.

Numerous plant varieties were included in the proposal covering 1,783 plants and the current rulemaking designates one plant variety, the Contra Costa wallflower, as Endangered.

24 Foreign Mammals and 1 Foreign Bird Proposed As Endangered

To help provide protection for 25 foreign species and subspecies, the Service has issued a proposed rulemaking recommending that they be listed as Endangered under the Endangered Species Act of 1973 (F.R. 4/19/78).

If formally listed as Endangered, none of the 24 mammals and 1 bird (or parts or products thereof) could be imported into the United States other than by permit for scientific or other limited purposes. Furthermore, within the United States, interstate shipment for commerce would be prohibited. In addition, the U.S. Government would be permitted to enter into bilateral or multilateral agreements with the countries in which the animals are resident to promote conservation activities.

The Service obtained information on the status of the 24 mammals from the Red Data Book (1972 edition) of the International Union for the Conservation of Nature and Natural Resources (IUCN) and from Jane Thornback of the Fauna Preservation Society. All 24 mammals were listed in the Red Data Book as endangered, and are also so recognized by Thornback, who is preparing an updated edition of the book. Information on the bird proposed for listing was received from Holly A. J. Nichols, an expert on West Indian parrots, and Warren King of the International Council for Bird Preservation.

Comments on this proposal should be submitted to the Service by July 18, 1978.

Name/Distribution	Comments
Ryukyu rabbit (<i>Pentalagus furnesi</i>), Ryukyu Islands	Very restricted range, limited habitat; endangered by habitat loss, predation; latest population estimate (1964): 500-900.
Simien fox (<i>Simia simensis</i>), Ethiopia	Population less than 500; endangered by habitat loss due to human use, shooting due to unearned reputation as sheep killer.
Malabar large spotted civet (<i>Viverra megaspila civettina</i>), southern India	No recent sightings, may already be extinct; decline due to persecution by man and loss of habitat to agricultural activities.
Fea's muntjac (<i>Muntiacus feae</i>), southern Burma, northern Thailand	Restricted range; vulnerable to hunting pressure; locally popular as meat animal.
Formosan sika (<i>Cervus nippon taiouanus</i>), southern Taiwan mountains	Decline due chiefly to uncontrolled hunting for meat; captive herd of 100-200 kept on Lu-tao (island); wild pop. less than 300.
Ryukyu sika (<i>Cervus nippon keramae</i>), Ryukyu Islands	Decline due mostly to hunting; range now reduced to one islet and possibly three other islands; islet pop. was 30 in 1964.
North China sika (<i>Cervus nippon mandarinus</i>), Shansi Province and possibly Chihli Province, China	Range and population have declined greatly owing to uncontrolled hunting and habitat loss to agriculture; raised for food on a few farms north of Peking.
Shansi sika (<i>Cervus nippon grassianus</i>), western Shansi Province, China	Present status and distribution unknown; has been overhunted for antlers for medicinal properties; habitat loss to farming.
South China sika (<i>Cervus nippon kopschi</i>), Yangste valley, China	Once widespread; currently, a few may survive in Yangste valley; decimated by overhunting for antlers for medicinal values.
Corsican red deer (<i>Cervus elaphus corsicanus</i>), Corsica, Sardinia	Decline due to uncontrolled hunting; poaching occurs on Sardinia, where deer is limited to 2 or 3 localities and numbers in low hundreds; may be extinct on Corsica.
Barbary deer (<i>Cervus elaphus barbarus</i>), Tunisia, Algeria, Morocco	Decline due to habitat loss and continued poaching; now limited to small region on Algerian-Tunisian border; pop. about 400.
Yarkand deer (<i>Cervus elaphus yarkandensis</i>), Chinese Turkestan	Decline due to overhunting and habitat loss; once widespread; now greatly reduced in range and numbers almost to extinction.
Bactrian deer (<i>Cervus elaphus bactrianus</i>), southern USSR, northern Afghanistan	Decline due to habitat disruption and (especially in USSR) poaching for meat; now down to a few remnant groups totaling 500.
Western giant eland (<i>Taurotragus derbianus derbianus</i>), Senegal to Ivory Coast	Poaching is chief cause of decline; also habitat loss; Senegal has most—under 200; a few in Mali; probably extinct elsewhere.
Jentink's duiker (<i>Cephalophus jentinki</i>), Sierra Leone, Liberia, Ivory Coast	Endangered by excessive subsistence hunting, habitat disruption; pop. no more than a few hundred; probably limited now to Liberia.
Tora hartebeest (<i>Alcelaphus buselaphus tora</i>), Ethiopia, Sudan, southern Egypt	Occurs in much of former range, but depleted by excessive subsistence hunting, habitat degradation; Sudan pop. 200-300 (1965).
Swayne's hartebeest (<i>Alcelaphus buselaphus swaynei</i>), Somalia, Ethiopia	Endangered by excessive subsistence hunting, habitat disruption; probably extinct in Somalia; under 700 left in Ethiopia, where poaching common although legally protected.
Zanzibar suni (<i>Nesotragus moschatus moschatus</i>), Zanzibar, nearby islets	Decline due to excessive subsistence hunting, habitat destruction; once common, now nearly extinct, but probably survives.
Sand gazelle (<i>Gazella subgutturosa marica</i>), Jordan, Arabian Peninsula	Endangered chiefly as result of mechanized hunting; overgrazing has degraded habitat; still common in a few desert areas.
Saudi Arabian gazelle (<i>Gazella dorcas saudiya</i>), Israel, Iraq, Jordan, Syria, Saudi Arabia, Kuwait	Population greatly depleted by mechanized hunting. Israel population estimated to be 500 animals in 1964.
Pelzeln's gazelle (<i>Gazella dorcas pelzelni</i>), Somalia	Chief decline around 1900 due to uncontrolled hunting; overgrazing since then has destroyed habitat; range now very limited.
Arabian gazelle (<i>Gazella gazella arabica</i>), Arabian Peninsula, Israel	Endangered by habitat destruction through overgrazing, widespread hunting (including motorized hunting); range greatly reduced.
Arabian tahr (<i>Hemitragus jakari</i>), Oman	Endangered by excessive hunting pressure, limited and vulnerable habitat.
Red-necked Amazon parrot (<i>Amazona arausiaca</i>), 7 Dominica	Abundant in 1930's but reduced to about 350 by 1977 by excessive hunting for food, pets, and as pests (eats fruit and nuts).
Iriomote cat (<i>Mayailurus iriomotus</i>), Iriomote Island, Ryukyu Islands	Endangered by habitat destruction caused by extensive farming; caught in traps set for wild pigs; no more than 30-40 cats survive.

65 Foreign Endangered Taxa Under Review By FWS

The status of 65 foreign animal taxa listed as Endangered is being reviewed by the Service to determine whether or not any of them should be reclassified as Threatened or should be removed entirely from classification under the Endangered Species Act of 1973 (F.R. 4/19/78).

The 65 mammals, birds, reptiles, and amphibians were among the 159 animal taxa listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora, and designated as Endangered by

the Service on June 14, 1976 (see July 1976 BULLETIN). At that time, the Convention was not yet in force and all 159 taxa were considered by their nominating countries to be threatened by unregulated international trade.

Having since been ratified by 44 countries, the Convention is now considered an effective regulator of trade in jeopardized wildlife. Accordingly, the Service believes that unregulated trade no longer is a major factor threatening the continued existence of the 159 Endangered taxa.

Common Name	Scientific Name	Distribution
Langur	<i>Presbytis entellus</i>	Tibet, India, Nepal, Sri Lanka, Pakistan, Kashmir, Sikkim, Bangladesh
Langur	<i>Presbytis pileatus</i>	Assam, India, Burma
Siamang	<i>Symphalangus syndactylus</i>	Malay Peninsula, Sumatra
Scaly anteater	<i>Manis temmincki</i>	Africa
Beaver	<i>Castor fiber birulaia</i>	Mongolia
Australian native mouse	<i>Zyomys pedunculatus</i>	Australia
Australian native mouse	<i>Notomys aquilo</i>	Australia
Spotted linsang	<i>Prionodon pardicolor</i>	Nepal, Assam, Burma, Indochina
Brown bear	<i>Ursus arctos pruinosus</i>	Tibet
Brown bear (Italian population)	<i>Ursus arctos</i>	Italy
Long-tailed otter	<i>Lutra longicaudus</i>	South America
Flat-headed cat	<i>Felis planiceps</i>	Malay Peninsula, Borneo, Sumatra
Black-footed cat	<i>Felis nigripes</i>	Southern Africa
Costa Rican puma	<i>Felis concolor costaricensis</i>	Nicaragua, Costa Rica, Panama
Temminck's cat	<i>Felis temmincki</i>	Tibet, Sumatra
Leopard cat	<i>Felis bengalensis bengalensis</i>	Eastern Asia
Jaguarundi	<i>Felis yagouaroundi cacomitti</i>	Mexico
Jaguarundi	<i>Felis yagouaroundi fossata</i>	Mexico, Nicaragua
Jaguarundi	<i>Felis yagouaroundi panamensis</i>	Nicaragua, Costa Rica, Panama
Jaguarundi	<i>Felis yagouaroundi tolteca</i>	Mexico
Marbled cat	<i>Felis marmorata</i>	Nepal, Malaya, Burma, Sumatra, Borneo
Andean cat	<i>Felis jacobita</i>	Chile, Peru, Bolivia, Argentina
Bobcat	<i>Lynx rutilus escuinapae</i>	Central Mexico
Babiroussa	<i>Babiroussa babiroussa</i>	Indonesia
Hog deer	<i>Axis porcinus annamiticus</i>	India, Thailand, Indochina
Philippine deer	<i>Axis calamianensis</i>	Calamian Islands (in Philippines)
Saiga antelope	<i>Saiga tatarica mongolica</i>	Mongolia
Goral	<i>Naemorhedus goral</i>	East Asia
Chamois	<i>Rupicapra rupicapra ornata</i>	Italy
Urival	<i>Ovis orientalis ophlon</i>	Cyprus
Argali	<i>Ovis ammon hodgsoni</i>	Tibet
Shapo	<i>Ovis vignei</i>	Kashmir
Lechwe	<i>Kobus leche</i>	Zambia and Angola to Zaire
Bontebok	<i>Damaliscus dorcas dorcas</i>	South Africa
Solitary tinamou	<i>Tinamus solitarius</i>	Brazil, Paraguay, Argentina
Harpy eagle	<i>Harpia harpyja</i>	Central America, northern South America
Greenland white-tailed eagle	<i>Haliastur albicilla groenlandicus</i>	Greenland and adjacent islands
Black-fronted piping guan	<i>Pipile jacutlaga</i>	Argentina
Montezuma quail	<i>Cyrtonyx montezumae merriami</i>	Mexico
Nordmann's greenshank	<i>Tringa guttifer</i>	Eastern Asia
Relict gull	<i>Larus relictus</i>	USSR, Mongolia, China, Vietnam
Mindoro zone-tailed imperial pigeon	<i>Ducula mindorensis</i>	Philippines
Red spectacled parrot	<i>Amazona pretrei</i>	Brazil, Argentina
Bahama parrot	<i>Amazona leucocephala</i>	Western Atlantic Ocean: Bahamas
Vinaceous breasted parrot	<i>Amazona vinacea</i>	Brazil, Paraguay, Argentina
Red-capped parrot	<i>Pionopsitta pileata</i>	Brazil, Paraguay, Argentina
Golden parakeet	<i>Aratinga guaruba</i>	Brazil
Helmeted hornbill	<i>Rhinoplax vigil</i>	Burma, Thailand, Malaysia, Borneo, Sumatra
Koch's pitta	<i>Pitta kochi</i>	Philippines
Japanese giant salamander	<i>Andrias davidianus japonicus</i>	Hanshu and Kyushu islands (Japan)
Chinese giant salamander	<i>Andrias davidianus davidianus</i>	Western China
Cameroon toad	<i>Bufo superciliaris</i>	Equatorial Africa
African viviparous toads	<i>Nectophrynoides</i> ssp.	Equatorial Africa
Panamanian golden frog	<i>Atelopus varius zeteki</i>	Panama
Spotted pond turtle	<i>Geoclemmys hamiltonii</i>	Northern India, Pakistan
Three-keeled Asian turtle	<i>Geomydas tricarinata</i>	Central India to Bangladesh, Burma
Indian sawback turtle	<i>Kachuga tecta tecta</i>	India
Burmese peacock turtle	<i>Morenia ocellata</i>	Southern Burma
Indian flap shell tortoise	<i>Lissemys punctata punctata</i>	India, Pakistan, Bangladesh
Indian soft shell turtle	<i>Trionyx gangeticus</i>	Pakistan, India, Nepal, Bangladesh
Peacock soft shell turtle	<i>Trionyx hurum</i>	India, Bangladesh
Yellow monitor	<i>Varanus flavescens</i>	Pakistan through India to Bangladesh
Bengal monitor	<i>Varanus bengalensis</i>	Iran east through Southeast Asia
Desert monitor	<i>Varanus griseus</i>	North Africa, Middle East to USSR, India, Pakistan
Indian python	<i>Python molurus molurus</i>	Sri Lanka, India

ENDANGERED SPECIES SCIENTIFIC AUTHORITY

Notices—May 1978

The Endangered Species Scientific Authority (ESSA) is responsible for the biological review of applications to import or export species listed in Appendix I, and to export species listed in Appendix II, of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Notices of the ESSA's findings are published in the Federal Register. Summaries of these notices are reported in the BULLETIN by month of publication.

Guidelines, Information Needs Set for 78-79 Quotas

The ESSA has issued its guidelines and information requirements for determinations on 1978-79 export of four species listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (F.R. 4/10/78).

The four species are the bobcat (*Lynx rufus*, excluding the Mexican bobcat, *L. r. escuinapae*), river otter (*Lutra canadensis*), lynx (*Lynx canadensis*), and American ginseng (*Panax quinquefolius*), all of which are also being considered for possible Endangered or Threatened status under the Endangered Species Act of 1973.

Responsible for determining whether or not export would be detrimental to the four species, the ESSA is seeking information within the context of its guidelines to help prepare its findings on a state-by-state basis and present them in the form of a proposed rule-making (scheduled for July) to be followed by a final ruling (September).

All comments should be submitted to the Executive Secretary, Endangered Species Scientific Authority, 18th and C Streets, NW., Washington, D.C. 20240.

The ESSA guidelines and information requirements are outlined below. Full details are given in the *Federal Register* notice, which may be obtained by writing directly to the ESSA.

Guidelines

The ESSA recognizes that harvest may be directly related to export, but acknowledges that the precise relationship for the four species, especially the bobcat, is not well known. A general assessment of the situation suggests that nearly all lynx and river otter pelts and ginseng roots harvested are subsequently exported, but the estimate for bobcat pelts ranges between 50 and 90 percent.

In addition, there is uncertainty as to the repercussions of restricting exports. That is, it is not known to what extent the domestic market would be able to absorb additional pelts and roots previously intended for sale abroad. There are indications, though, that reduced exports would result in reduced harvests. Any more specific conclusion, the ESSA says, is probably unwarranted. Given that conclusion, though, the ESSA recognizes that it must take into account the impact of harvesting on a state-by-state basis.

The ESSA acknowledges that harvest should not depress these species below their optimum sustainable population (OSP) levels. However, there is uncertainty as to exactly what these levels are for the four species.

As an alternative approach, the ESSA may rely to some extent on analysis of population age structure among the individual species. Given several assumptions, this approach is likely to indicate population trends—that is, whether a population is decreasing, increasing, or stable. Such trends can then be related to harvest data. This technique would be useful if applied on an annual basis, and especially if it can be coordinated with habitat evaluation and a comparison of current density with density at carrying capacity.

Meanwhile, as an interim alternative to use of this method, the ESSA may rely primarily on past reported harvest data.

For populations of bobcat, lynx, and river otter in some states, available biological data may allow the ESSA to determine that export is permissible under the guidelines indicated above. Where there is insufficient biological information available to make such a determination, the ESSA will take into consideration the management practices and initiatives being used to ensure conservation of these species.

These include controlled harvesting, with methods and seasons being set by the state; registration and marking of all pelts; and determination of harvest level objectives annually by each state.

In particular, the ESSA emphasizes that establishment of comprehensive state management programs incorporating these principles—as has already been done by some states—would greatly benefit the ESSA's own planning and review activities. Accordingly, the ESSA recommends that all states already having such programs in effect submit their annual reports directly to the ESSA.

Information Needs

For the bobcat, lynx, and river otter, the ESSA is seeking information on population estimates, indices, and trends; habitat conditions; harvest methods, practices, and data—past and present; and management activities, including state regulations and current harvest level objectives.

For the American ginseng, the ESSA requests details concerning present and past abundance, range, and distribution; life history, including reproductive biology; and information on state harvest practices and regulations.

Status Review

Rhesus Macaque In Bangladesh

The Service has announced that it will review the status of the Rhesus macaque (*Macaca mulatta*) in Bangladesh to determine whether or not this population should be listed as Endangered or Threatened (F.R. 4/13/78).

The decision to undertake this review was based primarily on a petition submitted in September 1977 by Ken Green of the National Zoological Park, Washington, D.C. Having collected data in Bangladesh over a 5-month period in 1976, Green presented substantial evidence to support his contention that the Bangladesh population of Rhesus macaque should be listed as Endangered.

According to Green, who forwarded his evidence to the Service in the form of a report on the primates of Bangladesh, forest destruction and land clearing represent the chief threats to the species. Furthermore, significant numbers of Rhesus macaques have been exported to the United States despite a prohibition on the export of Bangladesh's endemic primates.

All comments on this subject should reach the Service by June 13, 1978.

Rio Grande Fishes Recovery Team Named

The Service has appointed a Rio Grande Fishes Recovery Team, headed by Dr. Clark Hubbs of the University of Texas.

The other team members are Dr. Anthony Echelle of Baylor University, Dr. Salvador Contreras-Balderas of Universidad Autonoma de Nuevo Leon, Mexico, Michael Hatch of New Mexico State University, and Buddy Jensen of the Service's Dexter National Fish Hatchery.

The team is responsible for the Endangered Clear Creek gambusia, Pecos gambusia, and Comanche Springs pupfish. It is the second team named to cover a river drainage system.

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.)
- 15 crustaceans (E, T)
- Whooping crane (C.H.)
- 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)
- African elephant (T)
- 2 big-eared bats (E)
- 3 Ash Meadow plants (E)
- 5 plants (E)
- 6 San Francisco Bay Area plants (E, 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)
- Desert tortoise (Beaver Dam slope population) (E, C.H.)
- Deregulation of Tecopa pupfish

BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals	33	227	260	3	17	20
Birds	68	144	212	3		3
Reptiles	10	46	56	6		6
Amphibians	5	9	14	2		2
Fishes	29	10	39	12		12
Snails		1	1			
Clams	23	2	25			
Crustaceans	1		1			
Insects	6		6	2		2
Plants	15		15	2		2
Total	190	439	629	30	17	47

Number of species currently proposed: 132 animals
1,854 (approx.)

Number of Critical Habitats proposed: 39

Number of Critical Habitats listed: 27

Number of Recovery Teams appointed: 59

Number of Recovery Plans approved: 16

Number of Cooperative Agreements signed with States: 21

April 30, 1978

- Unarmored threespined stickleback (C.H.)
- Puerto Rican whip-poor-will (C.H.)
- Laysan duck (C.H.)
- Whip-scorpion (E, C.H.)
- 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.)
- 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.)
- 7 Oregon freshwater fishes (E, T, C.H.)
- Light-footed clapper rail and California least tern (C.H.)
- Yellow-shouldered blackbird (C.H.)
- Santa Cruz long-toed salamander (C.H.)
- Hawksbill sea turtle (C.H.)
- 2 Virginia fishes (T, C.H.)
- Maryland darter (C.H.)
- 4 Texas/New Mexico fishes (E, T, C.H.)

Pending Notice of Review

- Desert tortoise

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



ENDANGERED SPECIES TECHNICAL BULLETIN

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

May, 1978, Vol. III, No. 5



POSTAGE AND FEES PAID
U.S. DEPARTMENT OF THE INTERIOR

Int-423