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ENDANGERED SPECIES

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

Four Southeastern Plants Proposed for Listing

During February 1987, the following four species of plants endemic to small areas of the southeastern United States were proposed by the Fish and Wildlife Service (FWS) for listing as Endangered or Threatened:

Liatris helleri (Heller's Blazing Star)

A small perennial herb, *L. helleri* is a member of the aster family (Asteraceae). The species is found only on a few scattered summits in the northern Blue Ridge Mountains of North Carolina, where it grows in shallow, acidic soils on high ledges of outcrops that are exposed to full sunlight.

Of the nine historically known *L. helleri* populations, two are considered extirpated; a site in Watauga County was converted to a residential development and another in Mitchell County was subjected to intensive recreational use. Only three of the seven surviving populations receive some protection from human-induced habitat alteration. The other four are on lands that have been, or are being, developed for commercial recreational use. In an effort to prevent the species' extinction, the FWS has proposed to list it as Threatened (F.R. 2/19/87).

The seven surviving *L. helleri* populations occur in Caldwell, Avery, Ashe, and Burke Counties. Three of them occur on privately owned land, and are threatened by the construction of roads, parking lots, buildings, and other tourist support facilities or by trampling. A fourth site is being developed into a ski resort. Only the site owned by The Nature Conservancy receives full protection. The other two *L. helleri* sites are on public lands, Pisgah National Forest and the Blue Ridge Parkway, but these also are scenic areas that are subject to heavy recreational use. Soil compaction and erosion, trampling, and the potential construction of new hiking trails are significant threats to the species' survival.

L. helleri already is listed as threatened by the State of North Carolina, which prohibits intrastate trade in the species without a permit and collecting of the plants without both a State permit and written permission of the landowner. This protection will be reinforced and supplemented by the Federal Endangered Species Act if the FWS listing proposal is made final. An important addition would be the protection of habitat from potentially adverse Federal activities. Such activities could include further construction of recreational facilities, use of aerially-applied chemicals to fight fires, road construction, and permits for mineral exploration if carried out without the species' needs being considered. The FWS will work with the U.S. Forest Service and National Park Service to ensure the conservation of *L. helleri* on Federal lands while accommodating agency objectives to the extent possible. Both agencies have expressed interest in cooperating with the FWS to develop management and recovery plans.

photo by Nora Murdock

Liatris helleri *(Heller's blazing star) is a perennial with one or more arching stems reaching up to 16 inches (40 centimeters) from a tuft of narrow, pale green leaves.*

Comments on the proposal to list *L. helleri* as Threatened are welcome, and should be sent to the Field Supervisor, Endangered Species Field Office, U.S. Fish and Wildlife Service, 100 Otis Street, Room 224, Asheville, North Carolina 28801, by April 20, 1987.

Three Granite Outcrop Plants

The FWS has proposed listing ***Isoetes melanospora*** **(black-spored quillwort)** and ***Isoetes tegetiformans*** **(mat-forming quillwort)** as Endangered species, and ***Amphianthus pusillus*** **(little amphianthus)** as Threatened (F.R. 2/19/87). All three of these plants are restricted to small pools on granite outcrops in the southeastern U.S.

I. melanospora, a low-growing plant in the quillwort family (Isoetaceae) can be distinguished by its complete velum coverage, dark tuberculate megaspores, and short spiral leaves. *I. tegetiformans* is similar in appearance, but has a mat-forming growth habit of plants interconnected by rhizomes. *A. pusillus* is a monotypic genus of uncertain membership in the snapdragon family (Scrophulariaceae). This diminutive, fibrous-rooted annual has both floating and submerged leaves of different shapes and tiny white flowers. *A. pusillus* is ephemeral, usually completing its entire life cycle within a 3- to 4-week period.

The granite outcrops supporting populations of these plants occur as large, isolated domes or as gently rolling "flatrocks" in the Piedmont physiographic region of the southeast. Because of their scattered distribution and harsh environmental conditions (high light intensities, extreme wet/dry periods), these rock exposures are active sites for plant speciation, as shown by their high degree of endemism. Of the plants endemic to granite outcrops, the three recently proposed species are the most restricted. They grow in shallow, flat-bottomed temporary or vernal pools that are found on the crest and flattened slopes of some unquarried outcrops. Such pools retain water for several weeks following heavy rains and completely dry out in summer droughts. The vast majority of these pools are small, only 0.5 to 1.0 meters

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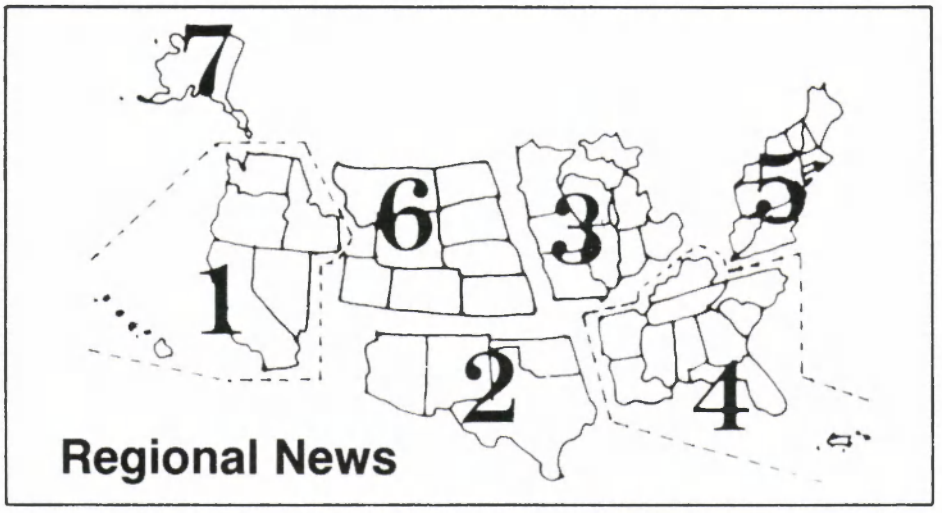

Regional News

Endangered species program regional staff members have reported the following activities for the month of February:

Region 1 — Wintering bald eagles (*Haliaeetus leucocephalus*) seem to be taking more of a liking to an area around Pend Oreille Lake in northern Idaho this season. This year's high count was 429 bald eagles near the southern part of the lake where kokanee (salmon) were spawning. Last winter, the high count was 274, and the birds favored the northern half of Pend Oreille.

* * *

The Fish and Wildlife Service (FWS), U.S. Forest Service, Washington Department of Game, National Park Service, The Nature Conservancy, and numerous volunteers surveyed bald eagle night roosting sites in Skagit County, Washington. Winter concentrations of these birds along the Skagit River corridor are among the highest in the nation. Traditionally, the bald eagle population often exceeds 400 on the Skagit during winter months when the eagles feed on salmon carcasses washed up on sand and gravel bars after spawning.

* * *

On January 5, 1987, the FWS closed on its purchase of the 11,360-acre Hudson Ranch in Kern County, California, for $3.5 million. The ranch was incorporated into the Bitter Creek National Wildlife Refuge, which was established for the Endangered California condor (*Gymnogyps californianus*). This newly acquired acreage will be added to 873 acres already owned by the FWS. The adjacent 1,304-acre Hoag Ranch is also in the process of being acquired by the FWS and should complete most of the planned acquisitions for the refuge.

* * *

In the final report of a 3-year study on the San Clemente loggerhead shrike (*Lanius ludovicianus mearnsi*), the shrike population was estimated to be between 19 and 30 adults. In the 1986 breeding season, there were only 24 adults. The population is limited by heavy predation of young and a lack of suitable nest sites. The report recommends removing remaining feral goats, relocating suitable nesting species, and controlling feral cat predation.

* * *

The locally initiated effort to develop a habitat conservation plan for the Marina Dunes ecosystem (Monterey County, California) advanced another step with the selection of a consultant to prepare the plan and associated environmental documents. The plan will address the conservation needs of the Endangered Smith's blue butterfly (*Euphilotes enoptes smithi*) and four species that are candidates for future listing: the black legless lizard (*Anniella pulchra nigra*), Menzies' wallflower (*Erysimum menziesii*), Monterey spineflower (*Chorizanthe pungens* var. *pungens*), and Monterey slender-flowered gilia (*Gilia tenuiflora* var. *arenaria*). In late 1986, the California State Coastal Conservancy approved a matching grant to the city of Marina that will fund up to $50,000 of the costs associated with this planning effort. Local landowners have made a commitment to pay the remainder of the planning costs.

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NMFS News

Under the Endangered Species Act, the Fish and Wildlife Service shares responsibility for conserving listed species with the National Marine Fisheries Service (NMFS), a separate agency that takes the lead on most sea-dwelling animals. NMFS recently published several notices relating to the Act, and they are summarized below:

A notice of review was initiated February 16 on the status of the Chinese River dolphin (*Lipotes vexillfer*). This aquatic mammal is found primarily in the lower and middle Chang Jiang (Yangzte) River in east-central mainland China. Information contained in a petition from the Center for Environmental Education indicates that this dolphin may qualify for listing under the Endangered Species Act. Further information is requested on this species' status and threats to its survival, and should be sent to the Assistant Administrator for Fisheries, National Oceanographic and Atmospheric Administration, National Marine Fisheries Service, Washington, DC 20235, by April 17. NMFS has indicated that it intends shortly to initiate status reviews on all other species of river dolphins worldwide.

In a February 27 notice, NMFS published its determination that listing the winter run of the chinook salmon (*Oncorhynchus tshawytscha*) in California's Sacramento River is not warranted at this time. A listing petition had been submitted by the American Fisheries Society. People wanting a copy of the determination can write to the above address or call 202/673-5348.

Listings Approved for Two Species

During February 1987, final listing rules were published for the following species, a tree and a fish:

Serianthes nelsonii

This large tree is endemic to two of the Mariana Islands in the western Pacific Ocean. A single mature specimen is known to survive on Andersen Air Force Base in the Territory of Guam, where the species is known locally as *hayun lagu*. Approximately 64 are known on the island of Rota, Commonwealth of the Northern Mariana Islands, where the local name is *tronkon guafi*. The future of *S. nelsonii* is imperiled by habitat degradation or destruction, typhoons and other natural or human-related disasters, insect damage, and the cropping of seedlings by introduced deer and pigs. It was proposed for listing as an Endangered species on October 25, 1986 (summary in BULLETIN Vol. XI No. 11), and the final rule appeared in the February 18, 1987, *Federal Register*. The governments of Guam and the Commonwealth of the Northern Mariana Islands, along with Air Force officials, have expressed interest in conserving the species.

Pecos Bluntnose Shiner (*Notropis simus pecosensis*)

Notropis simus historically occurred in the Rio Grande from El Paso, Texas, north through New Mexico to near the site of the Abiquiu Reservoir on the Chama River, and in the Pecos River in New Mexico from the upper reaches of Avalon Reservoir north to above the town of Santa Rosa. Because of habitat loss resulting from water diversion, irrigation, and impoundment, the Rio Grande subspecies, *N. s. simus*, is now extinct, and the Pecos subspecies, *N. s. pecosensis*, has severely declined in numbers. Water demand in the region is increasing, and may cause further reduction in range and population. To help prevent the extinction of the Pecos subspecies, the Fish and Wildlife Service proposed May 11, 1984, to list *N. s. pecosensis* as Threatened and to designate Critical Habitat for it. (See summary in BULLETIN Vol. IX No. 6.)

After extensive review of the comments on the listing proposal, the FWS published the final rule in the February 19, 1987, *Federal Register*. The Critical Habitat areas were reduced from the amounts proposed, and revised maps were printed with the final rule. Current Federal activities affecting the Pecos River are not expected to be incompatible with the Critical Habitat designation.

The State of New Mexico already prohibits take of the Pecos bluntnose shiner except under scientific collecting permit for conservation purposes. Because of this protection, and because habitat loss rather than take is the primary threat to the fish, the final listing rule included a special provision allowing for take without a Federal permit if a State collection permit is obtained and all applicable State laws and regulations are followed.

* * *

These listed species now are protected under the Endangered Species Act, the terms of which are summarized in this BULLETIN at the end of the story on species newly proposed for listing.

Regional News

(continued from page 2)

Staff from the Sacramento Endangered Species Office and the San Francisco Bay National Wildlife Refuge examined two land parcels that are the subject of a proposed land exchange involving the Antioch Dunes National Wildlife Refuge. The proposed exchange would increase the amount of habitat available for the Contra Costa wallflower (*Erysimum capitatum* var. *angustatum*), Antioch dunes evening primrose (*Oenothera deltoides* ssp. *howellii*), and the Lange's metalmark butterfly (*Apodemia mormo langei*). A number of invertebrates that are candidates for listing proposals (mostly insects) also would benefit from the proposed exchange.

* * *

Region 2 — Razorback sucker (*Xyrauchen texanus*) and bonytail chub (*Gila elegans*) fingerlings were stocked in ponds on the Buenos Aires National Wildlife Refuge in Arizona last fall as part of the recovery effort for these species. Recent measurements of these fish have documented excellent growth. Similar growth was shown for razorback sucker fingerlings stocked on the Imperial National Wildlife Refuge, also in Arizona. The encouraging results highlight the potential for using refuge waters as supplemental sites for raising Endangered fishes prior to eventual reintroduction into native waters.

* * *

A project is under way to establish two new populations of Texas snowbells (*Styrax texana*) in the hilly Edwards Plateau, west of San Antonio. If successful, the project will more than triple the currently known 39 plants and place Texas snowbells well on the road to recovery. The San Antonio Botanical Garden will coordinate the effort with help from the FWS, the State of Texas, and private landowners. Seedlings raised at the botanical garden will be planted at sites to be selected this spring.

Seedling production at the garden has been very successful; over 85 percent of the seed produced seedlings after receiving 4 to 6 weeks cold treatment. Various regimes will be used to determine the most successful planting techniques. The new populations will be monitored for 5 years.

* * *

At the end of January, the presence of a juvenile whooping crane (*Grus americana*) with several thousand sandhill cranes (*G. canadensis*) was confirmed in western Oklahoma. In mid-February, the bird moved north to Quivira National Wildlife Refuge in Kansas. On February 20, it was again in western Oklahoma with about 10,000 sandhill cranes.

This was the smallest fledgling-age bird color-banded in Canada in August. It apparently became separated from its parents during migration. Both parents arrived at Aransas National Wildlife Refuge in December. Discovery of the chick means all 21 chicks present in Canada in August have survived into winter. Average chick survival from August to December is typically about 70 percent.

* * *

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Endangered Gray Bat Benefits from Protection

by Merlin D. Tuttle
President, Bat Conservation International

The Endangered gray bat (*Myotis grisescens*) was once one of the most abundant mammals of the southeastern U.S. People in at least five States, especially Alabama, Tennessee and Missouri, viewed hundreds of thousands passing over in great columns each summer evening. These bats also played an important role in the checks and balances of nature as the primary controllers of night-flying aquatic insects, including mosquitos. Single colonies consumed literally tons nightly.

Until the arrival of man, caves remained the secure bastions of this dominant species. Problems apparently began when aboriginal tribes first camped or lived in the entrances of large caves. Some gray bats likely perished through suffocation when smoke from fires penetrated their previously safe living quarters, while others apparently ended up in Indian stew pots. Nevertheless, the majority remained out of reach in deep, dark caves.

It was modern man that made the real difference. During the Civil War, guano for gun powder was extracted from nearly every substantial gray bat cave in the South. Large guano accumulations in these caves undoubtedly prolonged the war by providing a reliable source of saltpeter long after importation had been cut off. Without a doubt, gray bat colonies suffered some of the biggest losses of the Civil War.

Following the war, the gray bat, a highly resilient species, once again was able to prosper, as evidenced by the conspicuous replacement of large guano deposits in most formerly occupied caves. Modern man had arrived, but he, for the most part, still feared and avoided the dark inner reaches of caves.

Early Studies

My personal introduction to gray bats occurred when my family moved to Knoxville, Tennessee, and lived near Baloney Cave. I soon joined high school friends in exploring this and other caves, quite unaware of the potential harm that could result to bats from our often poorly timed trips. I was particularly fascinated by the spring and fall appearance of several thousand gray bats that would mysteriously disappear in only a few days.

My fascination quickly grew, eventually leading me to search out and visit 120 gray bat caves in six States, while banding 40,182 of these bats in a study that spanned 20 years.[1] I learned that they are highly selective and require unique cave types, using 0.1 percent of available caves in winter and 2.4 percent in summer.[2] At least 95 percent of the entire known species population hibernates each winter in just nine highly vulnerable caves, with more than half in a single cave.[3]

Undisturbed colonies typically contain tens of thousands of individuals, sometimes hundreds of thousands.[2] More than any other American mammal, they require caves year-round. For their size, they are among the world's slowest reproducing mammals. Mothers usually do not produce their first offspring until they are two years old and require five years to leave just two that survive.[3] Furthermore, large numbers, often many thousands, are required in order to share the cost of heating a roost. When numbers fall too low, growth of young bats slows unacceptably, and the remaining colony dies out, leading to a threshold phenomenon sometimes referred to as the "passenger pigeon effect."[3,4]

By the late 1950's, the popularity of cave exploration was rapidly increasing. Unfortunately, one of my earliest observations was that the frequency of human visitation of caves was highly correlated with the disappearance of gray bat colonies. In the early 1960's I often found vast quantities of guano in caves that obviously had not been occupied by bats for several years. At first, I, like others who explored caves, believed that the bats had simply moved to other caves.

However, given their highly specific roost needs, few colonies have suitable options. Caves not already occupied are too warm or too cold, located too far from feeding areas, lack appropriate roost surfaces, are too vulnerable to predation, or are too disturbed by people. In fact, my banding studies documented that evicted colonies seldom survive.[2]

For example, when Hambrick Cave, near Guntersville, Alabama, became heavily disturbed by people, its large gray bat nursery colony disappeared within a year. A high proportion of these bats were banded, enabling me to trace their survival. Through banding studies, I already had established their seasonal movement patterns and also had documented loyalty for life to whichever hibernating cave was selected in their first winter. After losing their nursery cave, these bats disappeared from their traditional hibernating caves, demonstrating that they had not survived by merely moving to another summer cave.[5]

Decline Documented

Seeing such dramatic losses, and realizing how needless most were, I became alarmed and determined to do something. First, I needed clear documentation of the extent and causes of decline. In 1976, I revisited each of the 22 colonies (from the original 120) that I believed would be least likely to have declined since my last census in 1970. Even these colonies had declined by an average of 54 percent in just six years![2] If all 120 colonies had been censused, I likely would have found that most had disappeared entirely, as shown in a similar survey in Kentucky.[6] The few that had escaped human disturbance remained stable, while hundreds of thousands had disappeared from the most heavily disturbed sites. The relationship between human disturbance and colony decline was undeniable.[2]

I sampled guano from these caves and sent it to Dr. Don Clark at the Patuxent Wildlife Research Center for pesticide residue analysis. Several colonies showed potentially dangerous levels of toxins, ranging from organochlorine pesticides to polychlorinated biphenyls (PCB's) and lead, but the influence of human disturbance completely overshadowed our ability to assess any measurable impact from toxins.[2] By this time we knew that pesticides were killing some gray bats,[7] but probably not as many as had died from roost disturbance by people.[2,8]

Protection Provided

Regardless of why, it was clear that gray bats were seriously endangered. At my request, the U.S. Fish and Wildlife Service officially listed them in 1976. Although most conservation organizations were not yet ready to help anything as unpopular as bats, the Tennessee Valley Authority responded to my requests for assistance and played a leading role in saving these bats. Within two years, they had funded a major study of foraging habitat and had provided excellent protection for such vitally important sites as Hambrick and Nickajack Caves, where past nursery colonies likely totaled at least a half million or more.

The Fish and Wildlife Service soon acquired and protected Blowing Wind and Cave Springs Caves, where past nursery populations exceeded a total of half a million gray bats, and New Fern Cave, site of the world's largest known hibernating bat population which alone sheltered an estimated 1.5 million gray bats as recently as 1969. The Nature Conservancy, with Bat Conservation International's (BCI) assistance, acquired and protected Judges Cave, housing the most important remaining nursery colony in Florida, and Hubbards Cave in Tennessee (See *BATS,* December 1985). Hubbards is one of the species' three most important hibernation sites. State non-game wildlife programs

also played important roles in gray bat protection, especially in Florida, Missouri, Arkansas and Tennessee.

Success

It has been argued that remnant populations of Endangered bats likely could not reestablish themselves, even if provided adequate protection from human disturbance. Therefore, it is exciting to report enormous success over the first nine years of protective efforts for the gray bat. For example, of the four protected summer caves (Hambrick, Nickajack, Cave Springs, and Blowing Wind), three had entirely lost their nursery colonies by 1976, and Blowing Wind had been reduced to bachelor use by approximately 128,000 bats, only a fraction of former numbers. With protection, all four caves are now occupied by large nursery colonies that totaled 692,000 in 1985.[9] Without protection, it is unlikely that any of these bats would exist today, yet they alone consume nearly a million pounds of insects over Alabama and Tennessee reservoirs each summer. (Hubbards and New Fern Caves are extremely difficult to census accurately, hence their omission from regular censusing.)

Increasing cooperation from organized caving groups is encouraging. For example, the Tennessee Cave Survey now includes identification of sensitive bat caves and dates when they can and cannot be visited without harm to bats. Education of the public and cooperation between professional cavers and management agencies also is on the increase.

In most cases, gray bats apparently can be reestablished even where pesticides have been implicated as especially problematic, as was well demonstrated at Cave Springs Cave. Guano samples from this site contained the most pesticides and other pollutants of any examined,[11] yet simple protection from disturbance permitted colony reestablishment. Thousands of these bats apparently died of poisoning this summer, so it cannot be said that toxins are no threat, just that they are not yet an insurmountable obstacle.[9]

A remaining concern is that gates to prevent untimely human intrusion into caves can cause more harm than good, when improperly designed. We now know that gates must allow adequate fly-over space to be tolerated by gray bat nursery colonies.[2,10] Some early gates must be removed, as they are excluding bats from formerly important roosts. Fences generally have been effective only where adequate patrolling, signs, and law enforcement were provided, though signs alone have helped in some cases, especially where there are cooperative landowner agreements. Gray bat intolerance of full gates at nursery caves continues to be a major obstacle, though properly designed gates at hibernating sites, such as the one at Hubbards Cave, seem to be working well. (*Editor's note: see BULLETIN Vol. X No. 12.*)

Photo by Merlin D. Tuttle

hibernating gray bats on the ceiling of Hubbard's Cave

Unfortunately, many gray bat nursery caves and some important hibernation sites remain unprotected. In many of these, colonies already are gone or continue to decline rapidly. Much remains to be accomplished before the gray bat and others are truly safe.

Note: BCI members, Bob Currie and Fred Bagley of the U.S. Fish and Wildlife Service, and Ralph Jordan (Project Manager, Streams, Trails and Natural Heritage, Tennessee Valley Authority), deserve special credit for much of the success in saving gray bats. I thank them and the many other individuals and organizations who have helped.

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$5,000 Reward Paid in Grizzly Bear Case

A Montana man who led Federal and State wildlife agents to an illegally-killed grizzly bear (*Ursus arctos*) and helped them convict the poacher received a $5,000 reward January 2 from the National Fish and Wildlife Foundation and the U.S. Fish and Wildlife Service (FWS). Grizzly bears in the 48 conterminous States currently are listed by the FWS as Threatened, a classification that gives them protection under the Endangered Species Act. The FWS paid $3,000 of the reward and the Foundation contributed $2,000.

Chip Collins, director of the Foundation, said that the Foundation plans to pay more rewards in the future. "Because of the importance of deterring illegal killing of protected species such as grizzly bears, the National Fish and Wildlife Foundation will be establishing a reward fund for people who provide information about wildlife law violations that lead to convictions and enhance the recovery of endangered and threatened species." The non-profit National Fish and Wildlife Foundation is a private, independent organization established by Congress in 1984 to help raise funds to support high-priority fish and wildlife conservation programs.

The investigation began in September 1985, when the recipient overheard that another man had illegally killed an adult male grizzly bear in a portion of the Flathead National Forest, Montana, that is closed to grizzly hunting. He gave the information to officers with the FWS and the Montana Department of Fish, Wildlife, and Parks, and provided information on the location of the bear hide, skull, and skeleton. He later flew into the wilderness area with officers and helped them locate the remains of the illegally-taken bear.

As a result, the poacher, another Montana resident, was charged in U.S. District Court in Helena, Montana, with one count of illegal take of a Threatened species and a second count of possession and transportation of an illegally-taken grizzly bear. Through a plea arrangement, he pleaded guilty to the second count and was fined $8,500 and placed on 2 years' probation. This is the largest fine ever assessed against an individual for transportation and possession of an illegally-taken grizzly bear.

Proposed Listings

(continued from page 1)

square, and they are rare even in the best localities.

All three plants have declined significantly in range due to habitat degradation. Their presence on granite outcrops makes them particularly vulnerable to quarrying; 38 percent of historically known *I. melanospora* populations, for example, have been lost to this activity. Rock outcrops also are popular recreational sites. Many of the pools supporting the proposed plants have been damaged by off-road vehicle (ORV) use, especially as the result of increased erosion, and some of the plants have been crushed or uprooted directly. Other damage to the fragile habitat has resulted from such vandalistic activities as littering and fire building. The mere rearrangement of stones in two pools caused a decline in two populations of *A. pusillus* and *I. melanospora*. Because granite outcrops often are enclosed in pastures, some populations of all three plants also have been damaged by trampling and nutrient overload in the pools.

A. pusillus and *I. melanospora* are listed under Georgia State law as endangered, a classification that prohibits the take of these plants from public lands without a permit and regulates intrastate sale and transport in these species. Georgia law, however, does not provide for protection against habitat destruction, which is the main threat. The existing protection will be strengthened if the FWS listing proposal is made final.

Comments on the proposal to list *Amphianthus pusillus* as Threatened and *Isoetes melanospora* and *I. tegetiformans* as Endangered should be sent to the Endangered Species Field Station, U.S. Fish and Wildlife Service, Jackson Mall Office Center, Suite 316, 300 Woodrow Wilson Avenue, Jackson, Mississippi 39213, by April 20, 1987.

* * *

photo by Cary Norquist

Amphianthus pusillus *and* Isoetes melanospora *occur at this pool (which is much larger than most) in De Kalb County, Georgia, but some plants may have been destroyed when vandals constructed the thin rock "peninsula."*

Available Conservation Measures

Among the conservation benefits provided to a species if its listing under the Endangered Species Act as Threatened or Endangered is approved are: protection from adverse effects of Federal activities; prohibitions against certain practices; the requirement for the FWS to develop and implement recovery plans; the authorization to seek land purchases or exchanges for important habitat; and the possibility of Federal aid to State or Commonwealth conservation departments that have signed Endangered Species Cooperative Agreements with the FWS. Listing also lends greater recognition to a species' precarious status, which encourages further conservation efforts by State and local agencies, independent organizations, and individuals.

Section 7 of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for listed species. It also requires these agencies to ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the survival of a listed species. If an agency finds that one of its activities may affect a listed species, it is required to consult with the FWS on ways to avoid jeopardy. For species that are *proposed* for listing and for which jeopardy is found, Federal agencies are required to "confer" with the FWS, although the results of such a conference are non-binding.

Further protection is authorized by Section 9 of the Act, which makes it illegal to take, possess, transport, or traffic in listed animals except by permit for certain conservation purposes. For plants, the rule is different; the prohibition against collecting applies only to listed plants found on lands under Federal jurisdiction. Some States, however, have their own laws against take of listed plants.

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From the total of 29 thick-billed parrots (*Rhynchopsitta pachyrhyncha*) that were released in the Chiricahua Mountains of southeastern Arizona in September and October, 13 birds remain. The 8 parrots that disappeared in November may have overwintered in Mexico.

* * *

The Bureau of Reclamation's 4-year Arizona Bald Eagle Study, conducted by Biosystems Analysis, Inc., of Santa Cruz, California, is now under way. The study is designed to identify limiting factors to the population and has already yielded new information about the winter foraging ecology of a pair in the Pinal territory. A breeding adult female living at the Pinal territory has been captured and radio-collared. This pair began incubating their eggs on January 26. The research team will soon resume trapping efforts with the goal of attaching radios to a minimum of 12 breeding adults, including members of 8 pairs.

* * *

Region 4 — The indiana bat (*Myotis sodalis*) population has declined by approximately 50 percent at Stillhouse Cave in Kentucky, according to a survey conducted by the Asheville, North Carolina, Endangered Species Field Office. No reason for the decline was readily apparent during the survey. Stillhouse Cave is a priority Indiana bat hibernaculum.

The Virginia big-eared bat (*Plecotus townsendii virginianus*) population has increased by about 900 individuals since the last survey was conducted 2 years ago, for a current population of approximately 3,600. Twenty-five percent of the known population of this big-eared bat subspecies is located at Stillhouse Cave. Cave Conservation international has agreed to construct gates at Rocky Hollow Cave in southwestern Virginia and at a U.S. Forest Service cave in West Virginia. Rocky Hollow Cave, which will be gated in July, is used as a hibernating site by indiana bats. The West Virginia cave, scheduled to be gated soon, is an important site for Virginia big-eared bats.

* * *

Biologists from the Florida Department of Natural Resources, Jacksonville Endangered Species Field Office, FWS Sirenia Project, and a grassbed ecologist from the National Marine Fisheries Service's Beaufort Laboratory met at Hobe Sound, Florida, in January to plan the implementation of a 5-year study. Hobe Sound is a major feeding site for many of the 200 to 270 manatees (*Trichechus manatus*) that winter at the Florida Power and Light's power plant in Riviera Beach, approximately 18.5 miles to the south. The study is designed to evaluate the status of the grassbeds and the comments to a proposed no-wake regulation to protect grassbeds. Excessive turbidity caused by hundreds of large boats moving through the area in the fall and spring months is thought to be adversely impacting this critical manatee feeding area.

* * *

Representatives from the FWS Caribbean Field Office attended the January meeting of the Puerto Rican parrot (*Amazona vittata*) working group. Significant issues discussed included budgetary problems relating to proposed funding, delays in the construction of the Rio Abajo aviary, and safety issues related to increasing criminal activity in the Caribbean National Forest. Agreement was reached between FWS Patuxent Wildlife Research Center and National Audubon Society representatives on a volunteer program to conduct essential nest-guarding activities. in addition, there was agreement on a 1-year management policy to maximize the captive breeding stock.

* * *

An in-house team of three taxonomlsts has been appointed to evaluate data compiled on the silver rice rat (*Oryzomys argentatus*). The FWS postponed action last year to list the silver rice rat as Endangered because questions arose as to whether it was a distinct species or the same animal as the common rice rat that occurs throughout Florida. Based on the team's findings, the FWS will determine whether or not to give the silver rice rat Endangered Species Act protection. A report from the team is expected sometime in late May or early June. The silver rice rat is reported only from the lower Florida Keys.

* * *

Region 5 — On January 13, a meeting was held in Ashevllle, North Carolina, with representatives of eastern States involved in peregrine falcon (*Faico peregrinus*) recovery activities. Items discussed at the meeting included the 1986 nesting and productivity survey, 1987 release activities, 1987 funding outlook, nest manipulation, captive breeding outlook, and overall coordination of recovery activities in Regions 4 and 5.

* * *

A meeting hosted by the Environmental Protection Agency (EPA) was held on February 5 in Atlanta, Georgia, to discuss FWS pesticide consultation responsibilities under Section 7 of the Endangered Species Act. The EPA demonstrated a willingness to accommodate the endangered species concerns of FWS and outlined how both agencies could work together effectively.

* * *

Region 6 — The Utah Native Plant Society has funded a study on the ecology of the Endangered dwarf bear-poppy (*Arctomecon humilis*) near St. George, Utah. The study will address needs identified in the recently completed Bureau of Land Management's Dwarf Bear-Poppy Management Plan and the FWS' Dwarf Bear-Poppy Recovery Plan. The Bureau of Land Management will provide technical and financial assistance to the project. Utah State Division of Lands and Forestry (which owns and manages over half the species' habitat) and FWS personnel will support the research effort with limited technical and field assistance.

* * *

An informal interdisciplinary Montana Piping Plover Recovery Committee was organized in Montana in the spring of 1986. This group of biologists, ornithologists, and interested lay persons will meet at least once a year to organize searches for piping plovers (*Charadrius melodus*) and select geographic areas of responsibility for members to search.

During the 1986 breeding season, 20 piping plover nests were located in four of seven areas of potential or known habitats searched in northeastern Montana. Ten plover nests were found on Medicine Lake National Wildlife Refuge and the Northeast Montana Wetland Management District, six nests were located on Dry Arm of Fort Peck Reservoir, Charles M. Russell National Wildlife Refuge, and four nests were found at Nelson Reservoir near Malta, Montana. Additional pairs of plovers were noted at Fort Peck Reservoir, but nests were not located.

Data have been compiled and entered into an electronic data base. For a copy of the 1986 survey results in northeastern Montana, contact the U.S. Fish and Wildlife Service, Endangered Species Field Office, Federal Building and U.S. Courthouse, 301 S. Park, P.O. Box 10023, Helena, Montana 59626.

* * *

Region 7 — Last month, the regional office reported that approximately 20 Endangered Aleutian Canada geese (*Branta canadensis leucopareia*) died from avian cholera at the Modesto, California, oxidation ponds, a traditional roosting area for Aleutian geese in the San Joaquin Valley. Although action was taken to haze the geese from the affected area, several more dead Aleutian geese have been recovered. Dr. Nancy Thomas of the FWS National Wildlife Health Lab in Madison, Wisconsin, now reports that a total of 47 Aleutian geese have died from avian cholera in California during January and February of this year. An additional two geese that apparently died of lead poisoning also were recovered.

Although the wintering flock has begun to move northward toward Crescent City, where they stage prior to spring migration, cholera has periodically been reported from this area as well. Numbers of Aleutian geese in the Crescent City area are expected to reach a peak between late March and mid-April. Their movements

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and health will be closely monitored. The loss of 49 birds amounts to about one percent of the total population in the wild.

* * *

Region 8 (Research) — Two southern FWS cooperative research units are engaged in research projects related to the green pitcher plant (*Sarracenia oreophilia*). The Mississippi Cooperative Fish and Wildlife Research Unit, in a study of pitcher plant colonies, has developed a list of 329 associated plant species (including 282 vascular plants and 47 bryophytes). Baseline information has been collected on all known green pitcher plant colonies in Alabama, Georgia, and a recently discovered location in North Carolina. Communities will be monitored and the list will be refined to designate indicator species as the study continues. Information collected will be incorporated into the Green Pitcher Plant Recovery Plan.

In another study, green pitcher plants were transplanted into suitable sites and monitored during the subsequent growing season. From this effort, the Mississippi Unit reached the conclusion that it is economically feasible to transplant this species. Long-term monitoring is continuing to determine whether or not the plants will reproduce at the new site.

The Alabama Cooperative Fish and Wildlife Research Unit is producing two slide-tape shows on the green pitcher plant and its habitat, based upon information needs identified by the Office of Information Transfer. These modules will stimulate interest in protecting, preserving, and enhancing the remaining pitcher plant bogs in the southeastern United States. One version will be for general audiences, while the other slide-tape will include semi-technical information of interest to resource managers. Currently in review, the final products are expected to be available by summer. Copies will be available for loan; information on how to order these products will be provided when the presentations are completed.

* * *

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED U.S. Only	ENDANGERED U.S. & Foreign	ENDANGERED Foreign Only	THREATENED U.S. Only	THREATENED U.S. & Foreign	THREATENED Foreign Only	SPECIES* TOTAL	SPECIES HAVING PLANS
Mammals	26	20	242	5	0	22	315	23
Birds	61	16	141	3	2	0	223	55
Reptiles	8	6	60	10	4	13	101	21
Amphibians	5	0	8	3	0	0	16	6
Fishes	39	4	11	22	6	0	82	43
Snails	3	0	1	5	0	0	9	7
Clams	23	0	2	0	0	0	25	21
Crustaceans	4	0	0	1	0	0	5	1
Insects	8	0	0	5	0	0	13	12
Plants	118	6	1	26	3	2	156	54
TOTAL	295	52	466	80	15	37	945	243**

*Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, Olive ridley sea turtle, leopard, and piping plover.

**More than one species may be covered by some plans, and a few species have more than one plan covering different parts of their ranges.

Number of Recovery Plans approved: 209
Number of species currently proposed for listing: 27 animals
31 plants
Number of Species with Critical Habitats determined: 96
Number of Cooperative Agreements signed with States: 47 fish & wildlife
26 plants

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