

ENDANGERED SPECIES

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

House Subcommittee Hears Testimony on the Act

Oversight hearings on the Endangered Species Act of 1973 were held by the U.S. House of Representatives on February 22 and March 8, 1982. These sessions, along with an earlier round of hearings conducted on December 8 and 10, 1981, by the U.S. Senate, are preliminary to reauthorization of the Act by Congress.

Congressman John Breaux (D-LA), chairman of the Subcommittee on Fisheries and Wildlife Conservation and the Environment, Committee on Merchant Marine and Fisheries, presided over both days of House hearings. Breaux opened the hearings by stating, "I think most of us agree that the goals of the Act are noble. Most of us also agree that there have been problems for various reasons with its implementation. Let us resolve to listen to each other to work together in a spirit of compromise, to develop legislation that will result in a strong, effective, and rational program to protect endangered species." Testimony was received by the Subcommittee from three Federal agencies and from over 2 dozen other witnesses representing State governments, private industry, conservation groups, and academia.

The witnesses were organized into panels addressing various issues. Summary testimony of the Fish and Wildlife Service (Interior), National Marine Fisheries Service (Commerce), and the State Department was not heard until the end of the second day, allowing these witnesses to respond to all preceding testimony.

Eugene Hester, Deputy Director of the Service, testified that a recent agency review of the Act had revealed "several problem areas which need to be addressed." He stated that the Service, however, was "uncertain how to translate the identification of these problems into specific legislation" and suggested that, perhaps, policy or regulatory changes could solve many of the problems. The Service recommended that the Section 7 "exemption process" be

streamlined and that an "experimental population" category be established under the Act. The Service requested a 1-year reauthorization during which it will attempt to "correct identified problems through existing regulatory and administrative mechanisms before opening up the Act to further major legislative modification." Other Service witnesses were Ronald E. Lambertson, Associate Director and Endangered Species Program Manager; John L. Spinks, Chief, Office of Endangered Species; and Richard Jachowski, Chief, Office of the Scientific Authority.

William H. Stevenson, Deputy Administrator for Fisheries, National Marine Fisheries Service, summarized Commerce's activities conducted under the Act. He testified that the Act "has worked well with respect to the marine species" and recommended a 2-year reauthorization without amendments. Richard B. Roe, Acting Director, Office

of Marine Mammals and Endangered Species, also testified for Commerce.

The testimony of David A. Colson, Assistant Legal Advisor for Oceans, International Environmental and Scientific Affairs, U.S. Department of State, focused on international wildlife conservation, and in particular, on the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) which is implemented by the Act. Colson stated, "The Department of State is firmly committed to the reauthorization of the Act as a means of carrying out our international obligations and furthering our interests. We should be concerned about amendments to the Act which would call into question our ability to carry out our obligations or which would detract from the leadership role we exercise."

Prior to the State Department's testimony, a proposal had been made that the Act be amended to require that the United States *automatically* take a reservation if, under CITES, a domestic species is added to the CITES appendices notwithstanding U.S. opposition. Colson commented on this amendment,

Continued on page 5

Condor Pair Accidentally Destroys Its Own Egg

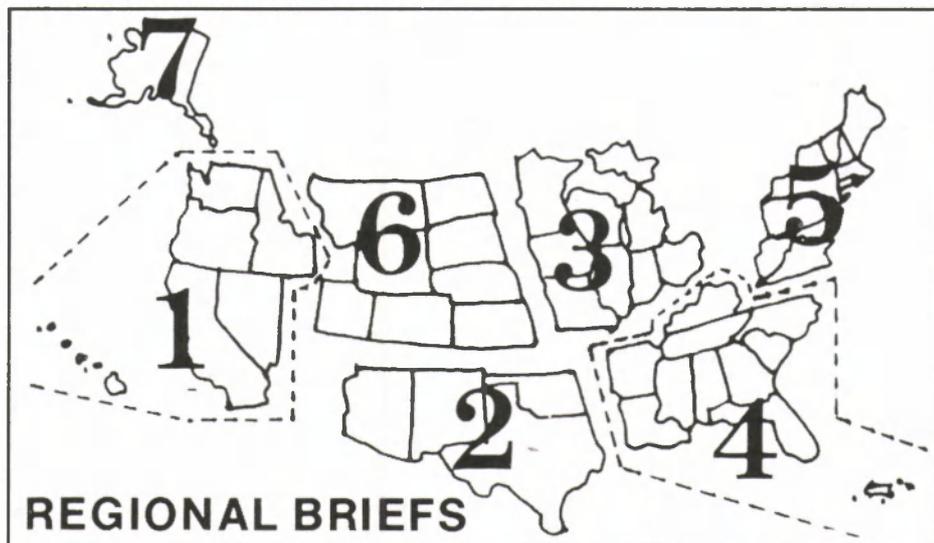
Efforts to conserve the critically endangered California condor (*Gymnogyps californianus*) were dealt a setback February 26 when the first egg known to have been laid this season was accidentally destroyed by the breeding pair.

On February 14, a biologist with the Condor Research Center was the first person ever to witness the laying of a California condor egg. The egg was dropped from the standing position, falling about one foot into a sand substrate without suffering any apparent damage, and the female began incubation within minutes. The biologist observed the event through a telescope from one-third of a mile away in the mountains northwest of Los Angeles.

Both birds took turns incubating the egg until February 24, when the male

condor refused to relinquish it to the female. After 2 days of disputing, the female managed to work the egg out from under her mate. Unfortunately, the egg rolled out of the nest cave and, despite efforts by both condors to work it back inside, it rolled over the cliff. Most of its remains were quickly consumed by ravens and the female condor, although a few fragments were recovered for study.

The condor pair has mated again since the incident and, because the loss occurred so early in the breeding season, there is a reasonably good chance that the birds might produce a second egg. They are believed to be the same pair that successfully fledged a chick 2 years ago after other disputes at that time.



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

Region 1—Efforts to eradicate all feral sheep and goats from Mauna Kea Forest Reserve on the Island of Hawaii are progressing successfully. The proj-

ect was mandated by a Federal Court order, and is intended to protect the Endangered palila (*Psittirostra baillieui*) and its mamane-naio forest ecosystem. Between July 1980 and May 1981, the first phase of the project involved public hunting, which harvested 1074 feral sheep and 95 feral goats. The second

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

Robert A. Jantzen, *Director*
(202-343-4717)

Ronald E. Lambertson
*Associate Director and
Endangered Species Program Manager*
(202)343-4646)

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

John L. Spinks, *Chief,
Office of Endangered Species*
(703-235-2771)

Richard Parsons, *Chief,
Federal Wildlife Permit Office*
(703-235-1937)

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

TECHNICAL BULLETIN STAFF
Clare Senecal Kearney, *Editor*
Michael Bender, *Assistant Editor*
(703-235-2407)

Regional Offices

Region 1, Suite 1692, Lloyd 500 Bldg., 500 N.E. Multnomah St., Portland, OR 97232 (503-231-6118): Richard J. Myshak, *Regional Director*; Edward B. Chamberlain, *Assistant Regional Director*, Sanford R. Wilbur, *Endangered Species Specialist*.

Region 2, P.O. Box 1306, Albuquerque, NM 87103 (505-766-2321): Michael J. Spear, *Regional Director*; Robert F. Stephens, *Assistant Regional Direc-*

tor; Jack B. Woody, *Endangered Species Specialist*.

Region 3, Federal Bldg., Fort Snelling, Twin Cities, MN 55111 (612-725-3500): Harvey Nelson, *Regional Director*; Daniel H. Bumgarner, *Assistant Regional Director*; James M. Engel, *Endangered Species Specialist*.

Region 4, Richard B. Russell Federal Bldg., 75 Spring St., S.W., Atlanta, GA 30303 (404-221-3583): James W. Pulliam, *Regional Director*; John Christian, *Assistant Regional Director*; Alex B. Montgomery, *Endangered Species Specialist*.

Region 5, Suite 700, One Gateway Center, Newton Corner, MA 02158 (617-965-5100): Howard Larsen, *Regional Director*; Gordon T. Nightingale, *Assistant Regional Director*; Paul Nickerson, *Endangered Species Specialist*.

Region 6, P.O. Box 25486, Denver Federal Center, Denver, CO 80225 (303-234-2209): Don W. Minnich, *Regional Director*; Charles E. Lane, *Assistant Regional Director*; Don Rodgers, *Endangered Species Specialist*.

Region 7, 1101 E. Tudor Rd., Anchorage, AK 99503 (907-276-3800, ext. 495): Keith M. Schreiner, *Regional Director*; Jon Nelson, *Assistant Regional Director*; Dennis Money, *Endangered Species Specialist*.

U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

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

phase, involving Hawaii Department of Forestry and Wildlife staff, resulted in the taking of 494 feral sheep and 64 feral goats by October 1981. At that time, it was estimated that fewer than 30 sheep and 6 goats remained. Since then, a bimonthly program of 1-week long efforts using Hawaii personnel and helicopters has been continuing in the effort to eradicate the few remaining feral goats and sheep.

The Laysan Duck Recovery Plan has been submitted to the Director for approval.

Representatives of interested Federal and State agencies and the botanical community at large met recently in California for the annual review of the approximately 800 California plant taxa published in the December 15, 1980, Notice of Review.

Region 2—The Dexter National Fish Hatchery has produced about 1.8 million razorback sucker (*Xyranchea texanus*) eggs, with approximately 500,000 larvae hatched as of March 1, 1982.

Some progress is being made toward acquisition of the San Bernardino Ranch (Arizona) in fiscal year 1982 after meetings with The Nature Conservancy and the Cochise County Recreation Commission. The ranch contains habitat for several listed fishes.

As of February 26, 1982, there were eight active bald eagle (*Haliaeetus leucocephalus*) territories in the Salt and Verde River systems (Arizona), with young hatched at three sites. One nest, however, was about to be flooded by the rising Horseshoe Reservoir. The adults at that nest are incubating the eggs, and several contingency plans are being considered.

The Texas Parks and Wildlife Department is assisting Region 2 by trapping and shipping Texas bobwhites (*Colinus virginianus texanus*) to be used as "foster parents" for introductions of masked bobwhite (*C.v. ridgwayi*) chicks from the Patuxent Wildlife Research Center into Mexico. This project is part of the U.S./Mexican Cooperative Agreement for Wildlife Conservation.

Region 4—The Georgia Department of Natural Resources has located two more eagle nests in Georgia. Unlike the nest found last year, which was the first nest reported in Georgia in several years, these nests are not located on the coast.

The Eastern Indigo Snake Recovery Plan has been submitted to the Director for approval. Draft recovery plans for the Tennessee purple coneflower (*Echinacea tennesseensis*), Alabama cavefish (*Speoplatyrhinus poulsoni*), and the painted snake coiled forest snail (*Anguispira picta*) have been submitted for technical review. Agency reviews are being conducted on recovery plan drafts for the Puerto Rican

parrot (*Amazona vittata*), red wolf (*Canis rufus*), and Eastern cougar (*Felis concolor cougar*).

The Range-wide Red-cockaded Woodpecker Survey is continuing with input from military installations and national wildlife refuges in the region.

The Green Pitcher Plant Recovery Team was appointed on January 6, 1982, and a draft recovery plan, completed under contract, was transmitted to the recovery team on February 12, 1982.

Since early February, there has been a continuing die-off of manatees (*Trichechus manatus*) in Lee County, Florida. As of March 4, the toll was 21 known dead. One was probably injured in a boat collision, but the others exhibited no signs of trauma and their cause of death has not yet been determined, although cold water temperatures have been ruled out. The manatee salvage and necropsy team, operating out of the National Fish and Wildlife Laboratory (NWFL) in Gainesville, Florida, has taken tissue samples, which are being analyzed at NWFL and various other labs.

Region 5—Pete McLain, Deputy Director of the New Jersey Fish, Game, and Wildlife Department, has prepared a plan for bald eagle management in New Jersey. The one remaining bald eagle pair in the State has a long history of nesting failure, but officials are hopeful that they will accept a captive-produced hatchling this spring from the Patuxent Wildlife Research Center.

A bald eagle found incapacitated along the lower Connecticut River January 31 was rehabilitated by raptor experts Jan and Stuart Mitchell and released 2 weeks later. The nature of the bird's problem was not known, but it had a body temperature lower than normal, and the Mitchells provided food and antibiotics. The event received coverage in the local Connecticut press.

The Delmarva Fox Squirrel Recovery Team met in Annapolis February 19 to discuss recovery progress, funding, and updating of the recovery plan. Additional squirrel transplants in Maryland and Virginia are scheduled for this spring.

Region 6—A management plan is being prepared for whooping cranes (*Grus americana*) on the Platte River in Nebraska. The plan will be based largely on the results of recent studies completed by the Service, U.S. Geological Survey, and Bureau of Reclamation. Phase I of the plan will concentrate on a review of the Platte River Studies and the flow aspects of the plan, including the amount of flow needed to scour the habitat, the amount needed when cranes are present, and the amount needed to protect the wet meadow complex. Phase II of the plan, to be completed when funds become available,

Culebrita Island Remains Part of Refuge System

On February 1, 1982, Secretary of the Department of the Interior, James G. Watt signed a notice advising the public of his decision on the proposed disposition and administration of lands declared excess by the U.S. Navy on the islands of Culebra and Culebrita, Puerto Rico. The Department has decided to deed 936 acres in Culebra Island to the Commonwealth of Puerto Rico and to transfer 776 acres to the Service. The decision also retains approximately 262 acres on Culebrita Island in the Service's National Wildlife Refuge System.

Six species protected under the En-

dangered Species Act of 1973 are affected by this disposition which implements the alternative combining social, economic, and wildlife benefits developed in the Final Environmental Impact Statement. Cooperative management agreements between the Commonwealth and the Service relating to conservation and development of the natural and cultural resources on the land involved have been developed and will be carried out. The formal land exchanges are planned for early 1982. (For more information on this story see the November 1981 BULLETIN).

will cover other alternatives and recommendations for protecting the habitat, such as mechanical and chemical methods for clearing woody vegetation.

A Memorandum of Understanding (MOU) was signed with Francis E. Warren Air Force Base in Cheyenne, Wyoming, for the management and protection of a rare plant species, the Colorado butterfly plant (*Gaura neomexicana* ssp. *coloradensis*). One of three known populations exists on the base. This is the first of several MOU's that Region 6 is pursuing for plants.

Twenty Aleutian Canada geese (*Branta canadensis leucopareia*) were killed by a mink (*Mustela vison*) at the Northern Prairie Wildlife Research Center during a blizzard the night of February 23. Over 50 mallards (*Anas platyrhynchos*) were also found dead. The winter bird pens have been relatively secure in the past, and it is thought that the deep snow drifts may have allowed the animal to cross the perimeter fences into the pen complex. Although the mink at first eluded a number of live traps which were set in and around the pens, it was found captured the following morning.

A dead black-footed ferret (*Mustela nigripes*) was found near the ranch southwest of Meeteetse, Wyoming, where dogs killed a ferret last September (see the October 1981 BULLETIN). The ferret was found by Dr. Tim Clark, who has been working in the area to obtain information on the winter activities of black-footed ferrets and to locate additional prairie dog towns with ferrets present. A necropsy did not reveal the cause of death, but additional tests are being conducted. It has been determined that the ferret definitely was not the individual radio-collared and tracked in November 1981 (see the December 1981 BULLETIN).

A third dead ferret, this time a road kill, was found March 3 about ¼ mile north of Meeteetse, and approximately

15 miles northeast of the main study area. This latest discovery has raised biologists' hopes of finding a new population of ferrets.

Region 7—Work is continuing on revising both the approved Aleutian Canada Goose Recovery Plan and the agency review draft of the Alaska Peregrine Falcon Recovery Plan.

Back Issues of Bulletin Available

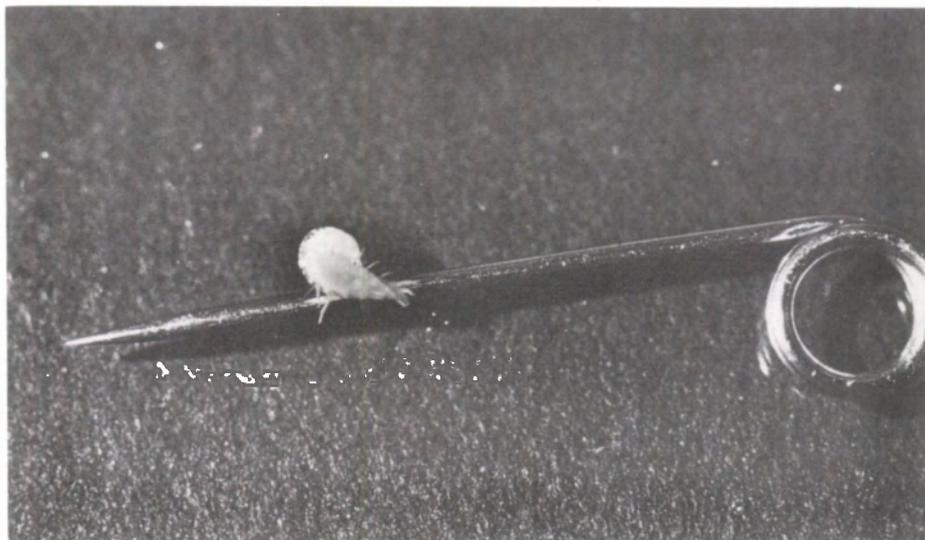
Back Issues of the *Endangered Species Technical Bulletin* are available from the Fish and Wildlife Reference Service in Denver, Colorado. This service is an agency of the Denver Public Library and is funded by the U.S. Fish and Wildlife Service, Division of Federal Aid. Available "hard copy" issues will be sent free of charge upon request for as long as the supply lasts. A set of back issues (July 1976 November/December 1980) is available on microfiche for \$2.00. Please state clearly which "hard copy" issues (month and year) you wish to receive and/or send money for microfiche copy to Fish and Wildlife Reference Service, Unit 1, 3840 York Street, Denver, Colorado 80205 (800/525-3426).

Attention Readers

If you are receiving a duplicate copy of the BULLETIN, or if your office continues to receive copies addressed to individuals no longer employed by your agency, please let us know so that we can eliminate these entries from our mailing list. Please refer to the zip code as well as to the addressee when you call or write regarding changes in the mailing list. Thank you.

—The Editor

Hay's Spring Amphipod Listed as Endangered



This tiny aquatic crustacean, the Hay's spring amphipod (*Stygobromus hayi*), was recently added to the U.S. List of Endangered and Threatened Wildlife and Plants.

Photo by C. Kenneth Dodd

Hay's spring amphipod (*Stygobromus hayi*), an aquatic crustacean occurring in a single spring within the National Zoological Park in Washington, D.C., was listed by the Service as an

Endangered species (F.R. 2/5/82). Critical Habitat has not been determined for the amphipod because of possible collection threat or malicious acts.

Extensive surveys of the Rock Creek

Drainage by Dr. John Holsinger of Old Dominion University have determined that Hay's spring amphipod is found only at one small spring which emerges from the rocky western wall of the Rock Creek Valley and flows about 35 meters into Rock Creek. No more than 10 individuals of the species have been seen at the site at any one time.

The continued existence of this species is threatened by vandalism and by overcollecting for scientific purposes. Additionally, since the entire habitat covers an area of only about 5 square feet, it could be threatened by the possibility of its existence being overlooked during future park planning.

Implementation of the protections provided by the Endangered Species Act of 1973 for the amphipod will have no effect on development since those protections are consistent with the current management and maintenance of both Rock Creek Park and the National Zoological Park. No plans or projects are known or anticipated which will be affected by this rule. The listing, however, will draw attention to the species' existence and add further justification for its protection during future planning at the National Zoological Park.

The species was first proposed (under the scientific name *Stygonectes hayi*) as Endangered on January 12, 1977. As a result of the Endangered Species Act Amendments of 1978, that proposal was withdrawn by the Service. The species was repropoed on July 25, 1980.

Wood Stork Population Declines in States

Through a notice of status review (F.R. 2/16/82) the Service is seeking additional biological data on the U.S. population of the wood stork (*Mycteria americana*) to determine whether this species should be protected under the Endangered Species Act. The review was prompted by data indicating population decline and adverse habitat modification.

The Service is also seeking information regarding environmental and economic impacts which might be effected by a possible listing of the stork or by a determination of Critical Habitat for the species (i.e. effects on Federal funding, grants, or permits). Information responsive to the notice should be submitted on or before April 19, 1982, to the Area Manager, U.S. Fish and Wildlife Service, Department of the Interior, 15 North

Laura Street, Jacksonville, Florida 32202.

Biology and Status

Wood storks, the only true stork native to the U.S., are large, long-legged wading birds which frequent freshwater and brackish wetlands and nest in cypress and mangrove swamps. They feed in freshwater marshes and similar habitats.

Formerly, wood storks nested in the coastal southern States from South Carolina to Texas. Today, nesting in the U.S. is confined to Florida and southeastern Georgia. The U.S. breeding population has declined from approximately 75,000 in the early 1930's to only 10,000 in 1979. The most consistent nest failures have occurred since 1960, with the overall number of storks

breeding in the U.S. declining 41 percent between 1960 and 1975.

Two major factors involved in the decline of the wood stork in the U.S. are (1) the reduction in the number of available nesting sites and (2) the loss of an adequate food base during the nesting season. Both factors are due primarily to drainage and altered hydroperiods caused by manipulation of wetlands, particularly in south Florida. Major wood stork rookery and feeding areas are located on a map published within the notice of status review.

The present U.S. breeding population is now disjunct from the population which nests from Mexico through Central and South America to northern Argentina. The Mexican and Central American breeders, which disperse into the southern U.S. after breeding, are not subjects of this review.

The Endangered Species Act of 1973, as amended in 1979, designates the Secretary of the Interior as both the Management Authority and the Scientific Authority of the United States, for the purposes of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Management Authority responsibilities are delegated to the Associate Director—Federal Assistance; Scientific Authority responsibilities are delegated to the Associate Director—Research.

The Service's Wildlife Permit Office (WPO) functions as staff to the U.S.

Management Authority for CITES, assuring that wildlife and plants are exported or imported in compliance with laws for their protection and issuing permits for legal trade of these species. The Service's Office of the Scientific Authority (OSA) functions as staff to the U.S. Scientific Authority for CITES. OSA reviews applications to export and import species protected under CITES, reviews the status of wild animals and plants impacted by trade, makes certain findings concerning housing and care of protected specimens, and advises on trade controls.

Service Announces Preliminary Proposals to Amend CITES Appendices

The Service has announced the preliminary results of its review of North American animals included on Appendices I and II of CITES (F.R. 2/17/82). Public comment on the review is invited, and all statements received by August 31, 1982, will be considered in determining whether the Service should submit proposals to the CITES Secretariat for circulation to the Parties.

Background

At last year's CITES conference at New Delhi, India, the Parties resolved to conduct a 10-year review of the appendices, and a notice initiating Service participation in this process was published in June 30, 1981 (see the July 1981 BULLETIN). The review is being conducted in coordination with the Canadian Wildlife Service and the Direccion General de la Fauna Silvestre of Mexico. Both biological and trade information on CITES species native to North America (and islands under U.S. jurisdiction) was solicited. Comments were received from a number of State wildlife agencies, zoos, and interest groups.

Potential Proposals

Among the potential proposals is a change in status under CITES for the following species, or some of their populations: bighorn sheep (*Ovis canadensis*), gray wolf (*Canis lupus*), lynx (*Lynx canadensis*), pronghorn antelope (*Antilocapra americana*), swift fox (*Vulpes velox*), Tule white-fronted goose (*Anser albifrons gambelli*), and the Mona Island boa (*Epicrates monensis monensis*). The Service is considering a proposal to retain the river otter (*Lutra canadensis*) on Appendix

II to help control trade in other otter species similar in appearance. Also under consideration are proposals to remove the blue pike (*Stizostedion vitreum glaucum*) and longjaw cisco (*Coregonus alpenae*) from Appendix I because these fishes are likely to have been extirpated.

The Service has decided not to propose changes in CITES listings of other North American animals at this time. Results of the review on plants will be announced in a separate notice. The Service plans to publish a further *Federal Register* notice in September 1982 announcing its decisions on the potential proposals prior to submitting them to the CITES Secretariat for consideration at the next CITES conference, which is expected to occur around April 1983.

Request for Data on Additions to CITES Appendices

The Service has published a notice (F.R. 2/16/82) requesting information from the public on species that might be considered for inclusion on Appendix I or II of CITES. All data received by May 31, 1982, will be considered in identifying organisms that should be proposed for CITES listing at the next conference of the parties, which will occur around April 1983.

The scope of this examination is worldwide, and includes both plants and animals. In its notice, the Service included a preliminary list of some plants that are considered candidates for listing under the Endangered Species Act, and which are of special interest for CITES protection because of actual or

Continued from page 1

saying it is "inappropriate and does not further our interests from a practical perspective." He said that the State Department was not opposed to reservations *per se*, but noted constitutional issues, the need for flexibility in conduct of foreign relations, and that "the legal structure of CITES is such that the taking of a reservation . . . is little more than a political objection, at least as concerns parties to the Convention." Colson also expressed concern that, such a precedent having been set by the U.S., broad scale taking of reservations could soon become the "death knell" of CITES' effectiveness.

A proposed amendment to the Act providing for a determination of "no detriment" under CITES had also been recommended to the Subcommittee. Colson commented on this saying, "While we would fully support greater State involvement in such determinations, we believe that to conform with CITES, any formulation concerning "no detriment" should be sufficiently flexible, providing for the consideration of possibly different criteria in specific cases, and subject to final determination by the national scientific authority established by Section 8(a) of the Act pursuant to the Act."

The third proposal of concern to the State Department is that the Act be amended to delete the requirement for listing foreign species, Endangered or Threatened, under the Act, leaving their listing solely to CITES. Colson clarified that the Act provides much broader protection than CITES and that "if listing of foreign species is terminated under the Act, Section 8 programs providing for fi-

Continued on page 11

potential international trade.

After analysis of the information received in response to the February 16 notice, the Service plans to publish another notice in July 1982 announcing those species selected as candidates for U.S. CITES proposals. After further comment and review, the Service will publish in October 1982 a notice of the U.S. proposals that will be forwarded to the CITES Secretariat.

Copies of the February 16 notice, the current CITES appendices, and the criteria for making changes in the appendices are available from the Office of the Scientific Authority, U.S. Fish and Wildlife Service, Washington, D.C. 20240 (202/653-5948).

Virginia's Endangered Mussels Studied by State's Co-op Fishery Research Unit

Second in a series on Endangered species projects being conducted by the Service's Cooperative Research Units program.

Scientists have known since the last century that the rivers of eastern North America contain the richest and most diverse freshwater mussel fauna in the world. Unfortunately, this important resource has declined to the point where 23 species of mussels are now classified as Endangered.

Since relatively little is known about the biology, ecology, and habitat requirements of these organisms, research is essential for their conservation and recovery. The Service's Virginia Cooperative Fishery Research Unit, along with the Biology Department of the Virginia Polytechnic Institute and State University (VPI & SU), was contracted by the Virginia Commission of Game and Inland Fisheries (VCGIF) and the Service's Endangered Species Program for studies on the State's nine Endangered mussel species. Although the work is concentrating on listed species in southwestern Virginia waters, it is expected to have applications to other mussels of the Tennessee River Basin.

The Cumberland Plateau region, which includes portions of seven States along the southern Appalachian Mountains, is a major center of molluscan

speciation. In addition to many endemic mussels, its waters contain fauna typical of the Ohio and Mississippi River Basins. Approximately 65 mussel species occur in Virginia, an indication of the area's diversity. Within the upper Tennessee River drainage, particularly sections of the Clinch and Powell Rivers, the North, Middle, and South Forks of the Holston River, and their numerous tributaries, are found the State's remaining populations of nine Endangered mussels: the fine-rayed pigtoe (*Fusconaia cuneolus*), shiny pigtoe (*F. edgariana*), rough pigtoe (*Pleurobema plenum*), Cumberland monkeyface (*Quadrula intermedia*), Appalachian monkeyface (*Q. sparsa*), birdwing (*Conradilla caelata*), dromedary (*Dromus dromas*), green-blossom (*Dysnomia [Epioblasma] torulosa gubernaculum*), and tan riffle shell (*D. [=E] walkeri*). (Two of these, *P. plenum* and *D. t. gubernaculum*, were reported historically from Virginia, but are now thought to be extirpated from the State.)

Virginia Co-op Fishery Research Unit Study

The lead responsibility for protection and management of the State's Endangered mollusks is with the VCGIF, which contracted with the Virginia Cooperative Fishery Research Unit and VPI & SU to obtain the necessary basic

biological and ecological data. Among the chief study objectives were to 1) compile a literature digest, determine the species' ranges, and develop relative distribution maps; 2) describe the general habitat characteristics for each listed mussel; and 3) summarize the data. Co-op unit leader Dr. Garland B. Pardue, assistant leader Dr. Richard J. Neves, and biologists Dr. Ernest F. Benfield and Sally D. Dennis submitted the final report, aided in their investigations by Alexander V. Zale, Lynn Russell Weaver, and Jane Barden.

The projects included under the first objective were originally contracted to the Tennessee Valley Authority (TVA), and that agency's 1978 report provided a literature review, along with historical and recent collection records; however, since no fieldwork had been conducted to update the previous records, it was necessary to verify the Endangered mussel sites. A team of four biologists was sent out during periods of low stream flow (summer-autumn) to sample both historical sites and other areas showing evidence of suitable habitat. Where practical, the search was carried out by snorkeling and wading; waterscopes were used in all riffle areas. Stream banks were examined for freshly dead shells, and representative shells of the various species found during the surveys were retained for the VPI & SU collection. All live specimens, however, were returned to the water. Wherever several individuals of a listed species were discovered, the biologists conducted quantitative sampling. All specimens in each sample quadrat were identified, counted, measured for shell length, and placed back into the same area.

Host Fish Surveys

Following internal fertilization of eggs, mussel embryos develop to the glochidial phase within the gills of adult female mussels. These immature mussels are released into the stream where, in most species, they must attach to the gills or fins of certain fishes. During this parasitic phase, the glochidia derive nutrients from the host fish and metamorphose further, developing the anatomy necessary to survive later as adults. Because of their particular requirements, most mussels exhibit degrees of specificity in their host selection; only certain fishes can benefit each mussel species. Conservation of the appropriate host fishes therefore is very important in any recovery effort for listed mussels.

As part of the Virginia Co-op Fishery Unit study, researchers visited all important Endangered mussel sites where there were no past fish collection records in order to determine species composition. A gas-powered, backpack electroshocking device was used to stun the fish and, after an initial exami-



Searching for endangered mussels with a plexiglass-bottom waterscope and mussel scoop.

nation at the site to determine that no protected fishes were taken, the specimens were preserved in formalin for identification and further analysis in the laboratory.

Although more research is necessary on the requirements of Virginia's Endangered mussels, life history studies conducted by Zale and Weaver on several Cumberlandian mollusks have confirmed that nongame fishes are important hosts. This point has implications for certain traditional fishery management practices, such as the stocking of streams with game species, which could change fish community compositions. Among the Virginia co-op unit's recommendations is that fisheries management operations in Endangered mussel habitat be carefully reviewed.

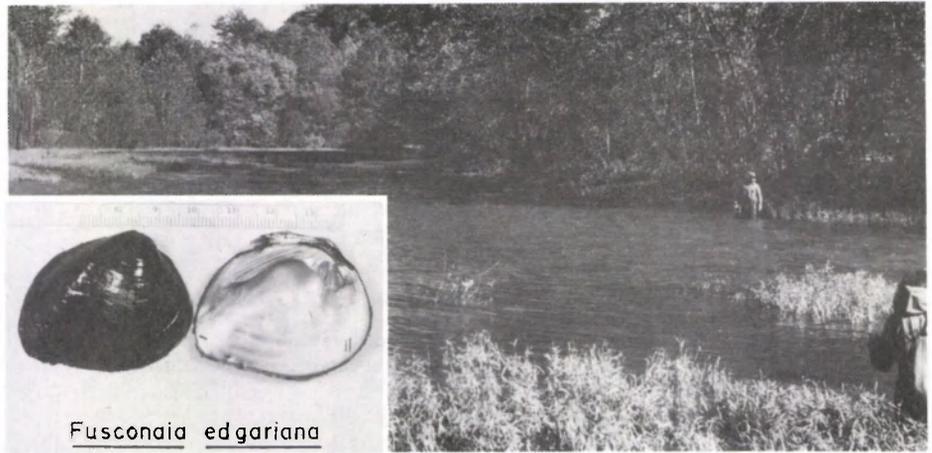
Other habitat characteristics take on greater importance after the glochidia drop off the host fish to begin the free-living phase of their life cycle. Literature and site surveys were conducted on the substrate, water quality, and hydrology of the waters within southwestern Virginia.

TVA has recently completed similar studies in the upper Tennessee River drainage to evaluate the status of Cumberlandian mussels throughout their range.

Management Recommendations

Of the seven Endangered mussels still remaining in Virginia, five have declined to such a low level that habitat conservation appears to be their only chance for long-term survival within the State. Habitat for *Quadrula intermedia*, *Q. sparsa*, and *Dromus dromas* is in the Powell River between river miles (PRM) 115.8 and 130.6; *Conradilla caelata* occurs within the same stretch, as well as in the Clinch River between (at minimum) CRM 206.9 and 219.2; and *Dysnomia walkeri* is found only in the Middle Fork of the Holston River between MFHRM 18.4 and 29.1. Taken together, these 37 miles constitute virtually all known habitat for the five mussel species in Virginia. Until more is known about the particular needs of individual species, conservation of habitat for all species present at any given Endangered mussel site (both listed and non-listed species) is considered the best approach. Among the study team's recommendations is that Virginia consider designating areas of special concern as mussel sanctuaries, similar to those already established in Tennessee to protect that State's Endangered mussels.

Because of their greater numbers and distribution, *Fusconaia cuneolus* and *F. edgariana*, the two other listed species still found in Virginia, are considered in less immediate danger. The Virginia Co-op Unit's studies of host fish identification and distribution, substrate, and



Typical habitat for the shiny pigtoe mussel in the North Fork Holston River. [Inset of the shiny pigtoe (*Fusconaia edgariana*).]

Photos by Virginia Cooperative Fishery Research Unit

water quality within the upper Tennessee River drainage indicates that suitable habitat for these two species exists outside their current range (although within their historical range). After further research on the mussels' life histories, and with permission from VCGIF, the researchers hope the two species can be reintroduced in some areas, with the goal of improving their status to the point where they will no longer be Threatened or Endangered.

Habitat Conservation

Before recovery and management of Virginia's Endangered mussels can be successful, the continuing problem of habitat degradation needs to be addressed. One of the study team's recommendations was simply the enforcement of existing water quality regulations. The Virginia State Water Control Board was urged to establish additional monitoring stations near Endangered mussel populations so that changes in immediate water quality can be detected. Some streams, such as the North Fork of the Holston River below Saltville, have been contaminated by chloride compounds and mercury. Even isolated spills of toxic substances could have devastating impacts on the sedentary, filter-feeding organisms.

Habitat damage also takes place in more obvious ways. Freshwater mussels generally occur in shallow streams where their specific temperature and oxygen requirements are met, but dam construction has turned some of these waters into deep, cold, stagnant reservoirs. Channelization, along with gravel and sand dredging, can result in the complete destruction of mussel beds. Siltation caused by improper agricultural, mining, and forestry methods has traditionally been a major problem, and today waste material from coal washing operations is also being recognized as having a significant impact on mussel

populations. Fine particles enter the watershed and degrade the water quality, often settling in mussel beds, clogging the mollusks' gills, and making the substrate too unstable for their support.

Recovery Plan

A TVA malacologist under contract to the Fish and Wildlife Service through the Asheville Area Office is writing a comprehensive recovery plan, on a watershed basis, for all listed mussel species occurring in the Clinch, Powell, and Nolichucky Rivers. The data gathered through the Virginia Co-op Fishery Research Unit Study will be an important contribution to development of the plan.

Although the importance of mussels in freshwater ecosystems is not fully realized by many people, mussels do play a significant role. Like all living things, they are part of a complex, delicately balanced network, and occurrence of a single species can affect many others. For example, both adult and immature mussels are an important food source for a number of mammals, waterfowl, and fishes. They are edible by humans as well, though not often consumed; mussel beds near municipal sewage or industrial outfalls are usually contaminated and consumption could therefore pose a serious threat to health.

Mussels are becoming very valuable as natural monitors of water quality. Because they feed by filtering particles out of the water column, mussels can accumulate pesticides, heavy metals, and other toxic substances in their tissues. The mollusks eventually collect pollutants present in streams even at very low concentrations, giving warning to humans of dangerous contaminants that are often difficult to detect.

Other selected co-op projects will be featured periodically in future issues of the BULLETIN.

Director Signs Five Plans

Final recovery plans for four species have been approved by the Service's Director: Grizzly Bear Recovery Plan—1/29/82; Maryland Darter Recovery Plan—2/2/82; Southern Sea Otter Recovery Plan—2/3/82; and Socorro Iso-pod Recovery Plan—2/16/82. A comprehensive work plan for the Florida manatee was signed on February 2, 1982.

Grizzly Bear

Historically, the range of the grizzly bear (*Ursus arctos horribilis*) extended from Ontario, Canada, westward to the California coast and from Alaska south to Texas and Mexico. Between 1800 and 1975, grizzly populations in the lower 48 contiguous States declined from estimates of over 100,000 to less than 1,000 bears. The leading causes for the species' decline were livestock depredation control, habitat deterioration, protection of human life, commercial trapping and sport hunting. Logging, mining, ranching, farming, and recreational development continued to add to man-caused mortality and adverse alteration of the grizzly's habitat.

Grizzlies are believed to have disappeared from Texas by 1890, California by 1922, Utah by 1923, Oregon by 1931, New Mexico by 1933 and Arizona

by 1935. Remnant populations remain in mountainous park, forest, and wilderness areas of Idaho, Montana, Washington, and Wyoming. A grizzly bear was killed in early 1979 near the Continental Divide in San Juan National Forest, Colorado. This report casts doubt on whether the grizzly is still extant in Colorado.

The recovery plan identifies six ecosystems where grizzlies have been present during the past decade. These areas presently have adequate space and suitable habitat for the species' continued survival and are the primary focus of the recovery plan. The six areas lie in and around the Yellowstone National Park, the Glacier National Park and Bob Marshall Wilderness Area, Cabinet-Mountains, Selkirk Mountains, the Selway-Bitterroot Wilderness Area, and the North Cascades National Park.

Three of the six areas, where grizzly research is already underway and from which extensive data bases are available, were identified as high priority for implementing recovery tasks. These areas are designated the Yellowstone Grizzly Bear Ecosystem, (YGBE), the Northern Continental Divide Grizzly Bear Ecosystem (NCDGBE—Glacier National Park/Bob Marshall Wilderness Area) and the Cabinet-Yaak Grizzly Bear Ecosystem (CYGBE). Implemen-

tation of recovery actions in the remaining ecosystems will be undertaken as additional funds become available.

Highest priority tasks identified in the plan include: (1) decreasing losses to the populations from illegal take and other man-caused mortality. (It is especially important to reduce losses of female bears.); (2) monitoring the population status and trends; (3) developing and/or applying guidelines for multiple use activities on Federal lands to avoid conflicts with grizzlies; and (4) completing and resolving management stratification of Federal lands to reflect the different intensities and importance of grizzly bear use and provide optimum management direction.

Implementation of the recovery plan will be initiated by the Service's Denver Regional Director and carried out through the Denver Regional and Billings Area Office Endangered Species Staffs. Further information can be obtained by contacting the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 25486, Denver Federal Center, Denver, Colorado 80225 (303/234-2209).

Maryland Darter

The Maryland darter (*Etheostoma sellare*), a 3-inch long fish, was discovered in 1912 and described the following year. In spite of attempts to collect the fish at the type locality ("Swan Creek near Havre de Grace, Maryland"—presumed to be Swan Creek near Aberdeen, Maryland), 50 years elapsed before it was reported again. In 1962 and again in 1965, single darters were collected from Gashey's Run (also near Aberdeen). In May 1965, a population of the elusive fish was located in Deer Creek in Harford County, Maryland; recent sightings of the darter, in 1974, 1977, 1978, and 1979 were all from Deer Creek. Researchers have generally concluded that the two individuals taken from Gashey's Run were probably stragglers from the Deer Creek population, which is probably the only permanent population of the species.

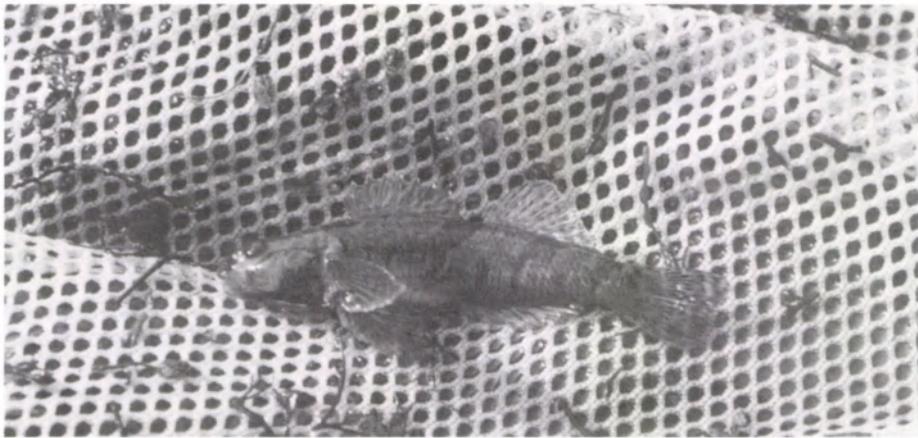
On March 11, 1967, the Maryland darter was listed as Endangered and placed under Federal protection. After studying the limited available literature and field records on the species, the Maryland Darter Recovery Team developed a recovery plan for the fish. Unless the actions specified in this plan are implemented in the near future, it is certain that the one known remaining population of this species will be further jeopardized.

The recovery plan outlines further study of the species' requirements and range. It also identifies steps to be taken for the protection, maintenance, and enhancement of the known darter



Remnant grizzly bear populations remain in mountainous park, forest, and wilderness areas of Idaho, Montana, Washington, and Wyoming.

National Park Service Photo



The Maryland darter is known to exist in only a single stream—Deer Creek, Harford County, Maryland.

Photo by James D. Williams

population and habitat. More specifically, it calls for the establishment of a refuge, development of water level requirements, improvement of water quality, active participation in the development of Deer Creek watershed activities, and development of public and scientific awareness of the species' needs. In the event that additional populations of the darter are found, the recovery plan suggests propagation of the fish in a controlled environment using living streams and/or hatchery rearing systems.

The presence of blue-green algae just downstream from the darters' habitat suggests that water quality standards may need to be improved. Studies are being conducted by the Maryland Water Resources Administration to document these needs.

The Maryland Darter Recovery Plan was developed by employees of the Maryland Department of Natural Resources, Smithsonian Institution Oceanographic Sorting Center, and the Service. Implementation of the recovery tasks will be initiated by the Service's Newton Corner Regional Director and carried out through the Newton Corner Endangered Species Staff. Further information can be obtained by contacting the Regional Director, U.S. Fish and Wildlife Service, Suite 700, One Gateway Center, Newton Corner, Massachusetts 02158 (617/ 965-5100).

Southern Sea Otter

The remnant southern sea otter (*Enhydra lutris nereis*) population in California currently inhabits approximately 300 kilometers of nearshore coastal waters from Oceano in San Luis Obispo County to Santa Cruz in Santa Cruz County. Although this population has been slowly expanding in range, the number of otters does not appear to have increased at expected rates in recent years.

The California population has been

under protective State legislation since 1913. In 1972, protective responsibility for the species was assigned to the Federal government under the Marine Mammal Protection Act (MMPA). Further protection was given the sea otter in 1977 when it was listed as Threatened under the Endangered Species Act of 1973 (ESA). Under both the MMPA and the ESA, Federal and State agencies are responsible for protecting the sea otter and its habitat.

The Service has the lead responsibility for developing and implementing the Southern Sea Otter Recovery Plan. The recently completed recovery plan was prepared by the Service in cooperation with the Southern Sea Otter Recovery Team.

The main objective of the recovery plan is to restore the southern sea otter to a non-threatened status and to maintain its population at its optimum sustainable level. Delisting of the species can be considered when the population is stable or increasing at sustainable rates in a large enough area of their

original habitat that only a small portion of the population would be decimated by any single natural or man-caused catastrophe. To reach this point (1) at least one additional sea otter population must be established outside the current population range; (2) the existing population and its habitat must be protected; and (3) the threat from oil spills or other environmental changes must be minimized. The recovery plan outlines strategies to achieve these goals.

Because of its limited range, the southern sea otter is believed to be susceptible to population declines from oil spills. Rates of range expansion and population growth appear to have declined in recent years, while offshore development, production, and transfer of petroleum products continues to increase.

Secondary concerns include:

- vandalism, poaching, and other forms of illegal take;
- contamination of the sea otter and/or its habitat from sources other than oil;
- destruction and degradation of sea otter habitat as a result of coastal zone development or other human activities;
- the likelihood of increased conflict with commercial and recreational fisheries; and
- lack of precise data concerning numerical and functional relationships between sea otters, shellfish, finfish, kelp, and other components of nearshore marine communities.

Sea otter translocation should provide the necessary foundation for ultimately achieving the recovery plan objective. Implementation of the recovery tasks will be initiated by the Service's Portland Regional Director and carried out through the Portland Regional and Sacramento Area Office Endangered



Translocation should provide the necessary foundation for ultimately achieving the Southern Sea Otter Recovery Plan objective.

Photo by Karl W. Kenyon

Species Staffs. Further information can be obtained by contacting the Regional Director, U.S. Fish and Wildlife Service, Suite 1692, Lloyd 500 Building, 500 N.E. Multnomah Street, Portland, Oregon 97323 (503/231-6118).

Socorro Isopod

Isopods are members of the Phylum Arthropoda and the Class Crustacea. Most non-marine species of isopod are terrestrial, but of the North American aquatic genera, one is notable. This genus is *Thermosphaeroma*, which contains at least four highly restricted species, all occurring in warm springs. Among these is the Socorro isopod (*Thermosphaeroma thermophilum*), an endemic to three neighboring springs in Socorro County, New Mexico.

This small aquatic animal is now confined to a single water system of an abandoned bathhouse ("The Evergreen"), which is supplied with water from Sedillo Spring. The water system, which now consists of a small (1m x 2m x 0.3m) cement-lined animal watering tank, a smaller pool, and approximately 40 meters of irrigation pipe, is located in the Socorro Mountains just west of the City of Socorro.

The Socorro isopod received little attention from conservationists until 1976, when the New Mexico Department of Game and Fish began to investigate its status. Studies by M.D. Hatch, S.M. Shaster, and others associated with the Department gathered significant information on the biology of the species. Captive populations were established in Albuquerque at the University of New Mexico, at the Rio Grande Zoo, and at Dexter National Fish Hatchery to preserve the genome against possible catastrophic extinction and to maintain diversity among captive populations. The major goal at present is to insure the survival of this species, possibly a relic of the marine biota that inhabited New Mexico millions of years ago.

The Socorro isopod has a flattened body with seven pairs of legs, antennae on the ear, and oar-like extensions (uropods) on the last segment. The grayish-brown color of the body is marked with small black spots and lines which run together forming a broad, black band in the center of each of the thoracic segments. All the exposed edges of the body are tinged with bright orange. The average length is 7.8mm in males and 5.1mm in females.

Although population sizes probably vary seasonally and perhaps annually, the only two published accounts of Socorro isopods made at the Sedillo Spring outflow have been similar. A 1976 report estimated the population to be about 2,400; a 1977 count estimated 2,449.

Because of its small numbers, limited

distribution and limited habitat, the Socorro isopod was listed as endangered by the State of New Mexico on February 10, 1978, and as Endangered by the Service on March 27, 1978. The Socorro Isopod Recovery Plan was prepared by the New Mexico Game and Fish Department under contract to the Service.

The major threat facing the Socorro isopod is loss of habitat. Municipal and private water developments have completely altered the natural habitat of this species by capping the original spring source and by piping the water to other areas. The amount of water diverted to "The Evergreen" water system is limited, and a readily accessible cut-off valve can stop even this flow. Present conditions place the species in a very precarious situation, because continuous flows have not been secured. In addition, protection of habitat from harmful contaminants and other negative impacts cannot be guaranteed, because the habitat is on private land. Even though no adverse biological factors are known to be operating, events such as introduction of predatory and competitive species could change the present situation.

The prime objective of the Socorro Isopod Recovery Plan is to prevent the species' extinction by stabilizing and enhancing its existing habitat, and to initiate recovery by establishing and maintaining at least two additional populations. The plan calls for continued data gathering on the Sedillo Spring and captive populations to provide additional management information.

Necessary to the species' survival is a secure, permanent flow of water, a need which could be met through an agreement with the City of Socorro and the present landowners. The plan recommends this and additional agreements with the landowner to prevent

contamination of the water, loss of vegetative cover and soil cover, and introduction of predatory or competitive species; to protect the area with fencing; and to monitor the status of the existing population. The plan also recommends the expansion of the Sedillo Springs habitat by constructing pools and runs, as well as the establishment and protection of other populations in natural areas.

Implementation of the recovery tasks will be initiated by the Service's Albuquerque Regional Director and carried out through the Albuquerque Endangered Species Staff. Further information can be obtained by contacting the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103 (505/766-2321).

Florida Manatee

A Comprehensive Work Plan for the West Indian Manatee (*Trichechus manatus*) has been prepared to assist with the planning and budgeting of future manatee recovery actions. The plan is a revision of the Outline and Implementation Schedule (Parts II and III) of the Florida Manatee Recovery Plan which was completed in 1980 and will be appended to the recovery plan. It identifies 33 public and private organizations which are now working on manatee conservation efforts in Florida.

Implementation of the work plan will be initiated by the Service's Atlanta Regional Director and carried out through the Atlanta Regional and Jacksonville Area Office Endangered Species Staffs. Further information can be obtained by contacting the Regional Director, U.S. Fish and Wildlife Service, Richard B. Russell Building, 75 Spring Street, S.W., Atlanta, Georgia 30303 (404/221-3583).



A Comprehensive Work Plan for the West Indian Manatee identifies 33 public and private organizations which are now working on conservation efforts for the species.

Photo by Pat Rose

HOUSE HEARINGS

Continued from page 5

nancial assistance to and cooperation with other countries could be severely hampered or even terminated." The State Department urged that the Act be reauthorized in such a manner so as not to conflict with U.S. treaty obligations or foreign policy interests.

Considerable testimony was given by wildlife department representatives of various States regarding bobcat export regulations under CITES. Several States, the International Association of Fish and Game Agencies, the American Fur Resources Institute, and the Wildlife Legislative Fund all recommended that Section 8 of the Act be amended to allow the States to make "no detriment" findings regarding the export of resident species (i.e. bobcat and river otter). The proposal would permit export of Appendix II species so long as the species is subject to management by the State. This position is based on the belief that data and expertise necessary to make such management decisions are better found at the State level.

The Massachusetts Audubon Society and the Humane Society, however, recommended that the "no detriment" authority remain with the Federal Government. This position is based on the assumption that funding provided Federal programs will be more consistent from year to year and that a Federal oversight program would avoid law enforcement problems involved with interstate traffic. These groups urged that no amendment be proposed to solve the bobcat dilemma.

The Wildlife Management Institute agreed that the "no detriment finding" should remain a Federal determination, but objected to the "population estimate" required by the recent court decision banning U.S. bobcat exports. A lengthy discussion of the merits of population trend information versus population estimates ensued. State representatives generally felt the latter to be unnecessary and expensive.

State representatives also called for restored Section 6 funding, for the establishment of experimental populations, and, in general, for more communication on the part of Federal agencies. Some groups called for the taking of an "automatic reservation" by the U.S. delegation to CITES on species listed for protection under CITES but not under the Act. Others characterized the latter as unwarranted.

The World Wildlife Fund called the Act "the most important wildlife conservation law in the United States and probably in the world" and warned that "nothing could damage more our contribution to the worldwide protection of endangered animals and plants than to

weaken the protection now available for our own endangered living resources." World Wildlife urged that interagency regulations implementing Section 7 be kept strong, and that all divisions of taxa (including so called "lower life forms") remain subject to the Act's protection. It called for publication and public review of the Service's priority system implementing Section 4, as required by the 1978 Endangered Species Act Amendments. World Wildlife also reminded the Subcommittee of our nation's responsibility under the Act for furthering the purposes of the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere.

Private industry complained of "myriad lists of protected species" which often cause confusion for travelers and

need for a listing process based solely on biological criteria, and made a plea for increased funding for information gathering purposes.

Representatives from the American Mining Congress, National Agricultural Chemical Association, National Forest Products Association, National Oceanic Industries, the Nuclear and Environmental Division of Northeast Utilities, and Western Regional Council all testified regarding what was referred to as the economic hardship some of their constituency had borne because of the Act. Most of these groups voiced objection to the delays surrounding the biological assessment feature of the Section 7 consultation process and they described the existing exemption process as too complicated and time con-

"the most important wildlife conservation law in the United States and probably in the world"

the wildlife products trade, and of what was described as unnecessary paperwork, such as the Service's regulation requiring import/export licenses. (See September 1980 and January 1981 BULLETINS for more information on import/export licenses.)

The 1978 and 1979 Amendments to the Endangered Species Act added economic assessment requirements to the listing process under Section 4 of the Act. This addition was intended to help identify at an early stage potential conflicts between protected species and needed development projects.

Michael Bean of the Environmental Defense Fund, representing 17 other conservation groups, asserted that the political implications of listing certain species which have potential economic impact has curtailed listing activity by the Service. He also testified that the economic analysis requirement itself, in addition to the economic review requirements of Executive Order 12291, the Regulatory Flexibility Act, and the Paperwork Reduction Act, have caused extraordinary delays in listing. He submitted to the Subcommittee an amendment which provides a strictly biological forum from which species listings would be made, and he proposed that economic analyses be delayed and made part of the Critical Habitat determination process—a second step to be completely separate from the listing process. (Under current provisions, listing and Critical Habitat requirements are generally a single process.) The Nature Conservancy also emphasized the

suming. The National Wildlife Federation submitted an amendment to streamline the exemption process, cutting its schedule to about half the currently required time.

Several industry representatives suggested that the Act be amended to provide compensation to parties incurring adverse economic impacts from the Act. Others requested that specific language be placed in the Act to clarify its "taking" provision under Section 9. The desired effect of such a change in the language would be to protect individuals who had received a "no jeopardy" opinion under Section 7 of the Act from the possibility of later being prosecuted for "taking" under Section 9 if their approved action inadvertently resulted in the destruction of one or several members of the species involved. A related topic of discussion involved the definition of "harm" which has been recently redefined by the Service (F.R. 11/4/81) on the grounds that the original language of the Act could be construed as prohibiting the modification of habitat even though there was no actual injury to Endangered or Threatened wildlife or plants (F.R. 6/2/81). Some witnesses, however, felt that the term should be legislatively defined.

Before May 15, 1982, both the House and the Senate will have completed their analyses of the Act and, most likely, will have developed draft legislation to amend it, as needed. Final legislation should be signed by September 30, 1982, the expiration date of the current Act.

New Publications

A new publication, *An Illustrated Guide to the Endangered, Threatened and Sensitive Vascular Plants of Washington* is available for \$6.00 from the Washington Natural Heritage Program, 3111 Seminar Building (SE 3109), The Evergreen State College, Olympia, Washington 98505. The number of copies is limited. Included for each species are scientific name, common name, family, and State and Federal status categories. Prominent characteristics, habitat, range, number of recent occurrences, threats and land ownership are summarized. A line illustration and a dot map showing county distribution are included.

Single copies of "Rare Species of Native Ohio Wild Plants" are available at no charge from the Division of Natural Areas and Preserves, Ohio Department of Natural Resources, Fountain Square, Columbus, Ohio 43224 (614/265-6466). This list contains 202 endangered, 190 threatened, 193 potentially threatened, and 96 presumed extirpated plant species. It differs significantly from the 1980 State plant list.

A report entitled "Potential Present Range of the Blackfooted Ferret as of January 1, 1981" has been completed and distributed. Copies are available from Maurice Anderson, U.S. Fish and Wildlife Service, P.O. Box 250, Pierre, South Dakota 57501.

"Guidelines for Transport and Preparation of Shipment of Live Wild Animals and Plants," a manual for shippers, handlers, and importers of live wild animals and plants is now available for \$13.00 from UNIPUB, 345 Park Avenue South, New York, New York 10010. This

BOX SCORE OF SPECIES LISTINGS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only	
Mammals	15	17	224	3	0	22	281
Birds	52	14	144	3	0	0	213
Reptiles	7	6	55	8	4	0	80
Amphibians	5	0	8	3	0	0	16
Fishes	28	4	11	12	0	0	55
Snails	3	0	1	5	0	0	9
Clams	23	0	2	0	0	0	25
Crustaceans	2	0	0	0	0	0	2
Insects	7	0	0	4	2	0	13
Plants	51	2	0	7	1	2	63
TOTAL	193	43	445	45	7	24	757

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

Number of species currently proposed: 10 animals
9 plants

Number of Critical Habitats Listed: 50
Number of Recovery Teams appointed: 69
Number of Recovery Plans approved: 50
Number of Cooperative Agreements signed with States:
38 fish & wildlife
11 plants

February 28, 1982

manual, which has been endorsed by the Conference of Parties (New Delhi, India—1981) to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), is also available in French and Spanish.

The 1979 U.S. Annual CITES Report which summarizes U.S. international trade in CITES listed species is now available. The report may be purchased in printed form (\$18.00) or in microfiche form (\$4.00) from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161 (703/487-4650). Requests for report number PB 82-128646 should be

made to the attention of the sales desk. Purchase requests may be made by telephone if the purchaser has an account with NTIS or if the purchaser has a major credit card.

Single copies of the October 1981 report entitled "Selected Freshwater Invertebrates Proposed for Special Concern in Massachusetts" are available from Arthur J. Screpitis, Massachusetts Division of Water Pollution Control, Lyman School—Westview Building, Westborough, Massachusetts 01581 (617/366-9181). When requesting a copy, please enclose 75¢ in U.S. postage stamps to cover mailing expenses.

March 1982

Vol. VII No. 3

ENDANGERED SPECIES

Technical Bulletin

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



POSTAGE AND FEES PAID
US DEPARTMENT OF THE INTERIOR

Int 423