



# ENDANGERED SPECIES TECHNICAL BULLETIN

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



*Frogman aids the netting of snail darters below Tellico Dam in successful second transfer Nov. 14, following the loss of 98 darters on Oct. 28*

## 98 Snail Darters Lost In Accident

Laboratory analyses have confirmed that a dip net contaminated with rotenone, a pesticide, killed 98 snail darters on October 28 while the Endangered fish were being moved at the Tellico Dam site on the Little Tennessee River.

The accident occurred as the darters were being collected by Service, Tennessee Valley Authority, and Tennessee Wildlife Resources Agency biologists to relocate them from waters below the unfinished dam to their spawning grounds upriver. Two boats were in use at the time.

### Unknown Source

The net was the property of the U.S. Fish and Wildlife Service, but the source of contamination is not now known.

Service officials said it could not be determined whether the net was contaminated by rotenone in the bottom of one of the boats, or whether it had been contaminated previously. Rotenone is used routinely in many fishery management activities.

Contamination of the net was suspected at the time of the accident and was subsequently confirmed by analyses conducted by a private laboratory and an Environmental Protection Agency Laboratory, Service officials said.

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### Supreme Court to Review Closing of Tellico Dam

The U.S. Supreme Court on November 14 agreed to review a lower Federal court ruling which has prohibited the Tennessee Valley Authority (TVA) from closing its Tellico Dam in order to preserve the Critical Habitat of the Endangered snail darter along the Little Tennessee River.

The high court acted on a petition for certiorari filed by TVA, which is appealing an injunction issued last January 31 by the three-judge U.S. Court of Appeals for the Sixth District. TVA contends the lower court ruling, if allowed to stand, would mean the loss of about \$80 million already spent on the nearly completed project, plus additional millions in economic benefits the dam would bring the region.

Environmentalists who brought the suit argued that closing the dam would create a reservoir that would destroy the snail darter's Critical Habitat in violation of section 7 of the Endangered Species Act of 1973. The appeals court agreed. (See the February 1977 BULLETIN).

### Co-op Program

## Georgia Is 20th State to Receive Federal ES Aid

The U.S. Fish and Wildlife Service signed a cooperative agreement with the Georgia Department of Natural Resources on October 6, raising to 20 the number of States now eligible to receive Federal grant-in-aid funds for their Endangered species programs.

States which have previously signed agreements with the Service are Arkansas, California, Colorado, Delaware, Florida, Maine, Maryland, Michigan, Missouri, Nebraska, New Jersey, New York, New Mexico, North Carolina, South Carolina, South Dakota, Virginia, Washington, and Wisconsin.

In fiscal year 1977, 17 States which had fully implemented their cooperative agreements received a total of \$1.6 million. Requests by States for Federal aid in FY 1978 are expected to total \$6.4 million.

### Application of Funds

Under the grant-in-aid formula, States may receive 66-2/3 percent Federal matching funds for approved Endangered species programs. The Federal matching share is increased to 75 percent where two or more States join in cooperative programs for specific species. States which have launched cooperative projects include Colorado and New Mexico for the peregrine falcon, and New York and New Jersey for restoration of the peregrine falcon, bald eagle, osprey, and Indiana bat.

To be eligible for cooperative program funding, species must be listed as Endangered or Threatened by either Federal or State laws, or be candidates for these lists. Federally listed species receive the highest priority, followed by State-listed species.

Species which are listed as at the edge of their range in one State, but are

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Ironically, the lost snail darters were being moved to give them a better chance of survival in the shallow waters along a 17-mile stretch of river that has been designated their Critical Habitat above the Tennessee Valley Authority dam. They were among a few hundred of the fish which were blocked from reaching their upstream spawning grounds by the dam's configuration.

Service officials said the biologists involved in the operation were experienced at such transfers. They have successfully moved more than 1,200 snail darters in similar operations last fall and in a previous effort to transplant the fish to the nearby Little Hiwassee River with virtually no losses.

TVA is trying to establish the species in alternate habitats as one phase of a campaign to gain permission to close the nearly completed dam.

#### Successful Transfer

Following the accident, the biologists made two successful transfers of 117 and 58 darters, respectively, on November 14 and 15 from below the dam to the upstream habitat at Coytee Springs. This move brought the total number of the species above the dam to about 900, according to TVA estimates.

## Regional Briefs

The Endangered Species Program is administered throughout the country by supporting staffs in the Service's six regional and Alaska Area offices. Endangered species activities are coordinated in each region by Endangered Species specialists, and most are now assisted by botanists as well as staff specialists for section 7 consultations.

While the regional Endangered species specialists work locally as arms of the Endangered Species Program, they all see their roles a little differently:

**Dave Marshall** (Portland, Region 1): "Most of all, we need to be familiar with what's going on here at the ground level. We work hard to coordinate Service/State programs for the maximum benefit of the species. And, we're the front line on section 7 consultation."

**Jack Woody** (Albuquerque, Region 2): "On the line in the regions, we try to implement the act and the Service's Endangered Species Program. We provide an advisory service to other agencies. Oftentimes, we more frequently deal with other agencies and the public than directly with the Service."

**Jim Engel** (Twin Cities, Region 3): "We're the watchdogs over regional Endangered species activities. Sometimes, we act as coordinators and

catalysts of the program so that all can be aware of the act and its implications. Other times, we act as servants to the public. We constantly provide information and advice to State agencies, other Federal agencies, and individuals on what the Federal regulations are."

**Alex Montgomery** (Atlanta, Region 4): "Our role is to satisfy Service responsibilities for administration of the Endangered Species Program. As Endangered species coordinator, I try to influence 'program advice' objectives to reflect our perspective of regional Endangered species needs—and then try to be sure that we get the best bang for the buck in meeting them."

**Paul Nickerson** (Boston, Region 5): "We consider ourselves part-biologist, part-accountant, and part program manager. Our work is a diverse mix of State-Federal, animal-plant, and travel-office. You name it, and—if it deals with the Endangered Species Act—we get involved in it."

**John Davis** (Denver, Region 6): "Section 7 and public information is the 'big press' right now. Some days, it's a full-time job. We review and coordinate recovery plans. We see that cooperative agreements are carried out. We prepare draft environmental assessments. Also, when public demand warrants, we plan and conduct public hearings. Actually, we'd like to have more time to be screening the status of animals and doing more toward listing."

**Bill Martin** (Alaska Area, Acting): "We try to carry out the objectives of the act on a regional level. Our task really boils down to coordinating recovery efforts only for two Endangered species—the Aleutian Canada goose, and the Arctic peregrine. We need to do more now toward the listing of plants."

Forthcoming issues of the BULLETIN will highlight monthly regional activities in the Endangered Species Program.

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### BULLETIN Distribution

An increasing number of individuals are requesting their addition to the BULLETIN mailing list. This widespread interest in the Endangered Species Program is greatly appreciated but, unfortunately, due to funding limitations, it is not possible to fill all of the requests.

Distribution of the BULLETIN is restricted to organizations and individuals having a direct involvement in the Program, or a professional need for information about its activities. Future requests to be placed on the mailing list should be accompanied by a brief description of organizational or professional interests which clearly demonstrate a need for regular receipt of the BULLETIN. Thank you!

# Proposals Set For Next ES Treaty Nation Meeting

A special working session of technical experts from 20 nations, held October 17-28 at Geneva, Switzerland, has produced agreement on a number of recommended steps to aid implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

Discussions were held regarding the possible addition or deletion of species protected by the treaty. But no final recommendations were adopted. Following is a summary of major actions taken at the meeting that will be placed on the agenda of the next full meeting of the treaty nations, scheduled for early in 1979 in Costa Rica.

• **Shipment of specimens.** It was recommended that the Convention draw up a set of international guidelines to cover the shipment of animal specimens by all forms of transportation to assure uniformity of handling. Live animal

regulations of the International Air Transport Association would be used as a basis for the draft guidelines.

• **Regulating exchange of zoological specimens.** The special working session recommended that all nations party to the treaty register all their scientific institutions which maintain animal collections. Scientists holding private collections should be urged to affiliate with registered institutions. Institutions should be required to notify their nation's management authority of any permanent transfers of specimens and this information should be included in the party nation's annual report to the Secretariat of the Convention.

• **Animal rescue centers.** It was generally agreed that management authorities should make their own arrangements for caring for confiscated animals.

• **Identification manual.** The working session recommended that an identifi-

cation manual be developed under direction of the Secretariat to assist control officers in recognizing protected specimens and their parts and derivatives. The manual would be used as a guide by the party nations to develop their own identification manuals.

• **Standardized listings.** To standardize and simplify the listing of species under Appendixes I, II, and III of the Convention, it was recommended that party nations agree to employ, in so far as possible, taxonomy based upon the *International Commission on Zoological Nomenclature* and the *International Code for Botanical Nomenclature*. A committee of experts would use these works to draft a standard taxonomy that would be circulated no later than September 1978.

• **Whales.** A closer working relationship between Convention nations and the International Whaling Commission (IWC) was recommended. It would include providing for reciprocal observers, accepting IWC's offer to advise party nations on cetaceans, and urging party nations not already doing so to adhere to the 1946 Whaling Convention.

• **Analysis of listed species.** A review of species listed by the Convention was recommended pursuant to criteria adopted at the 1976 conference of party nations. Proposed revisions by party nations would be offered for consideration at the 1978 conference or agreed upon by circulating them by mail.

## How Convention Species Lists Are Revised

The original lists of species protected under the Convention on International Trade in Endangered Species of Wild Fauna and Flora were negotiated along with the treaty in 1973. They have been amended once—at the full meeting of member nations in 1976.

The rules of the Convention allow member nations to propose changes in Appendix I and II listings either by submitting a proposal 150 days prior to formal meetings, which are held every two years, or by mail.

In the case of a formal meeting, the proposals require a two-thirds majority of those voting for adoption. The amendments take effect 90 days later.

### Voting by Mail

The mail procedure is more involved, but allows changes to be made between the biennial meetings. Proposals are submitted to the Secretariat of the Convention, headquartered in Geneva, Switzerland, who then forwards them by mail as a "notification" to all other member nations. These parties have 60 days to submit comments, recommendations, and relevant scientific data. The comments, in turn, are circulated to all parties and, if no objection is received by the Secretariat within 30 days, the amendment is adopted. It then will become effective in 90 days.

If an objection is received by the Secretariat within the 30-day period,

member nations are notified and then requested to formally cast a vote by mail. At least half of the nations must vote within 60 days and a two-thirds vote is needed for adoption. If less than half vote, the proposal is held over until the next formal meeting.

### Public Participation

The U.S. Fish and Wildlife Service encourages maximum public participation in the revision process. A member of the public can submit a petition at any time to add or delete a species, or to move a species from one Appendix to another. Petitions must be accompanied by adequate supporting biological information as well as data on trade.

This information will be reviewed by the Service's Federal Wildlife Permit Office and the Office of Endangered Species. If it is complete, the petition will be published as a notice in the *Federal Register*, with a 60-day public comment period allowed. All of the information received will then be reviewed by the Service and a decision made whether to forward the petition as an official U.S. proposal to the Convention Secretariat for action by all of the party nations.

Details on petition procedures may be obtained from the Federal Wildlife Permit Office, U.S. Fish and Wildlife Service, Washington, D.C. 20240 (telephone 202-634-1496).

## Changes Due in WPO Permit Processing

The Federal Wildlife Permit Office (WPO) is planning to institute several major changes in the processing of Endangered species permits in response to suggestions offered at a recent series of workshops.

The changes will be aimed at reducing delays in permit issuance and in simplifying permit application procedures. New application instructions are also being developed to help reduce errors in filling out forms.

A total of 11 public and in-service permit workshops were conducted by WPO on the regulations of the Endangered Species Act of 1973 and the Convention on International Trade in Endangered Species of Wild Fauna and Flora. The workshops were said to be well received. But several people commented, "I've learned a lot—but I'm still confused."

common in other States, are not eligible for Federal funding. Plants also are excluded.

#### Allocation Criteria

Under the Endangered Species Act, criteria have been established for allocating grant-in-aid funds. Generally, consideration is given to

- Species included under international agreement
- The number of Endangered species in a State program
- Potential for restoration of the species covered by the program
- Relative need of species for restoration efforts
- Readiness of a State to implement a program

Activities which are regarded as most vital for grant support are (1) the development of status reports on the species that are candidates for listing as Endangered or Threatened, (2) development of data for determination of Critical Habitats for listed species and for candidate species, and (3) implementation of proposals in approved recovery plans for listed species.

#### Intent of Agreements

In fashioning the 1973 Endangered Species Act, Congress incorporated cooperative agreements in order to allow qualifying States to retain and strengthen their traditional wildlife management roles. This was done out of recognition that the States want to assist in the restoration of their own Endangered species and are in many cases more familiar with the conservation needs and biological status of their resident wildlife—and those species which may be headed for trouble—than the Federal Government.

The States and territories have well over 5,000 conservation officers and thousands of wildlife biologists, while the U.S. Fish and Wildlife Service has only 180 law enforcement officers in the field and only a few hundred field biologists. Thus, the agreements are greatly increasing the available manpower to conserve Endangered species. In addition, the States and territories possess millions of acres of land that provide habitat for a great many Endangered and Threatened species.

#### Terms of Agreements

The agreements, which all contain similar basic provisions, are designed to foster better habitat management and protection for the species covered by the program. In addition to providing for financial support, the agreements establish a cooperative law enforcement effort between Federal and State officers. This makes possible joint investigations, apprehensions, and prosecutions of violators of either Federal or State laws.

## Island Habitat Acquired for St. Croix Ground Lizard

Green Cay, one of the two remaining island habitats of the Endangered St. Croix ground lizard (*Ameiva polops*), is being acquired by the Service so that it may be preserved in its pristine condition as a refuge.

An estimated 100 to 200 of the lizards occupy the uninhabited 13.8-acre cay that lies a quarter-mile off the north shore of St. Croix about 2.5 miles from Cristiansted. The rocky island is also a nesting ground for the American oystercatcher (*Haematopus palliatus*) and the brown pelican (*Pelecanus occidentalis*).

On June 3, the Service designated Green Cay and nearby Protestant Cay as Critical Habitat for the ground lizard in a final rulemaking listing the species as Endangered (see the June 1977 BULLETIN). Both cays remain free of the

ground lizard's chief predator, the mongoose (*Herpestes auropunctatus*), which contributed to its decline on St. Croix.

Ten years ago, the estimated lizard population on Protestant Cay, which is four acres in size, was 100. Since then, a hotel has been built on the island and a survey in 1976 yielded only about 50 ground lizards.

The owner of Green Cay had been preparing to sell the property to a developer, but subsequently agreed to purchase by the Service. The emergency acquisition was accomplished through a recent reprogramming of Land and Water Conservation funds. The transaction is expected to be completed by January.

States participating in the program are obligated to report emergency takings of protected species and maintain records of all takings, as well as work performed for funded projects. They also must agree to share biological and other information which may be employed by the Service in its consultations regarding other Federal agency compliance with the protective provisions of section 7 of the Federal law. This contribution is especially important because State fish and wildlife departments often have access to information not readily available to the Service.

In order to qualify for an agreement, a State must have established an adequate and active Endangered species conservation program for all Federally listed species. The agreements also stipulate that States must have the appropriate legislative authority to

- Conserve resident fish or wildlife determined by the State fish and wildlife agency or the Secretary of the Interior to be Endangered or Threatened.

- Provide fish and wildlife agencies with wide-ranging investigative authority to determine the status of resident species and their needs.

- Allow for the acquisition of terrestrial and aquatic habitats.

- Provide for public participation in the designation of resident species as Endangered or Threatened.

Included under conservation is authority to conduct research, census taking, law enforcement, protection, habitat acquisition and maintenance, species propagation, live trapping, transplantation, and limited regulated taking. Participating States agree to allow the Service to review their conservation programs. Federal funding may be withdrawn if the program is determined to be inadequate or inactive.

#### Amending the 1973 Act

Currently, Congress is considering legislation which would amend the Endangered Species Act of 1973 to ease some of the eligibility requirements and enable more States to participate in the aid program. The legislation also would extend the authorization for funding the program.

Many States have had difficulty qualifying for the grant-in-aid program because their laws are not broad enough. The 1973 Federal Endangered Species Act stipulates under section 6(c)2 that States must have established acceptable conservation programs "... for all resident species of fish or wildlife in the State" deemed to be Endangered or Threatened by the Secretary of the Interior. This covers insects, crustaceans, etc., which often are not included under narrower definitions of wildlife in State laws.

To remove this barrier, the House on October 18 passed an amendment (H.R. 6405) which would change the language of section 6(c)2 to allow a State to enter into a cooperative agreement even if it lacked authority to regulate and manage some resident listed taxa—if the State and the Secretary of the Interior can agree on a priority program for those listed species over which the State does have authority.

Although a similar extended authorization bill passed the Senate earlier this year, the facilitating wording has yet to be acted upon by the Senate. It has the support of the Fish and Wildlife Service and the International Association of Fish and Wildlife Agencies, which represents the fish and wildlife departments of all 50 States and Puerto Rico. A Congressional conference report reconciling the House and Senate versions is anticipated before the end of November.

# Congress Weighs Federal Nongame Conservation Program

Congress is considering legislation to create a Federal nongame fish and wildlife conservation program.

A measure introduced by Sen. Gary Hart (D-Colo.) and 18 cosponsors in the Senate (S. 1140) would extend aid to all nongame species, including marine mammals, but not to "an Endangered species." But a House bill (H.R. 8606), introduced by Rep. Edwin B. Forsythe (R-N.J.), would except both native Endangered species and marine mammals.

At a hearing September 30 before the House Subcommittee on Fisheries and Wildlife Conservation and the Environment, spokespersons from several national conservation organizations and Federal agencies endorsed the purposes of H.R. 8606 and the need for a program. But there was a range of comment and criticism on certain elements of the bill.

Witnesses from the U.S. Fish and Wildlife Service and the Council on Environmental Quality recommended that, instead of proceeding with H.R. 8606, the subcommittee should defer consideration of a nongame bill until the Carter Administration develops and presents its own proposal early in 1978.

## New Publications

Georgia's Endangered Species Program has published a two-document inventory of the protected species in the State entitled "Georgia's Protected Plants" and "Georgia's Protected Wildlife." The documents contain maps, descriptions, and illustrations of 58 flora and 23 fauna species. Copies are available free of charge from the Endangered Species Program, Georgia Department of Natural Resources, Office of Planning and Research, 270 Washington St., S.W., Atlanta, Ga. 30334.

*Proceedings of the Florida Panther Conference* held March 1976 are now available from the Florida Audubon Society. Copies of the 120-page document can be obtained for \$7.50 (Florida residents add 4% sales tax) from the society at P.O. Drawer 7, Maitland, Florida 32751.

### We Still Need Your Help

Your response to our call for information and suggestions has been most encouraging and useful, and it has played an important role in making the BULLETIN a success. Consequently, we invite you to continue sending us reports on your latest research and management activities (accompanying illustrations are also most welcome), as well as your ideas and comments about specific topics and the BULLETIN as a whole.

Witnesses from several national conservation organizations offered their support of H.R. 8606 contingent upon certain revisions, primarily in the proposed means of financing the program. Instead of annual appropriations (which the Fish and Wildlife Service would apportion to State fish and wildlife agencies on a three-for-one, Federal-State matching basis), the organizations would prefer, in the words of the National Audubon Society spokesperson:

"... a program specific for nongame fish and wildlife similar to that existing for game species via the Federal Aid in Fish and Wildlife Restoration Programs. . . . Much of the success of the current programs can be attributed to the continuity and dependability of their funding source, i.e. an excise tax on hunting and fishing equipment. . . . The National Audubon Society . . . [recommends] the adoption of an excise tax on certain recreational equipment, and wild bird foods as a vehicle for establishing the federal grant-in-aid funding requested. . . ."

This excise tax approach was supported by many other witnesses, who agreed with the justification offered by the National Audubon Society spokesper-

son that the "the non-consumption recreational use of existing wildlife management areas exceeds the consumptive use by several fold. We feel that these recreationists, which include both consumptive and nonconsumptive users, would be willing to pay their share. . . ."

Representative Forsythe said he would be more than happy to use this approach, if the public asks for it.

While approving the provision for matching grants (the bill also calls for 90-percent Federal grants to the States for initial program planning efforts), the Wildlife Management Institute took issue with the bill's lack of an apportionment formula. Secretary Lonnie L. Williamson said:

"Nongame fish and wildlife needs are not unique to any particular state or region. They are nationwide. There is, however, good reasoning for giving more money to the more populous states since, because of social and economic pressures, they have the most habitat-degradation problems. That situation can be handled nicely, we believe, by an apportionment formula which would allocate one-third of the federal money according to area and two-thirds according to population."

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## ENDANGERED SPECIES SCIENTIFIC AUTHORITY

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### Notices—November 1977

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

### Bobcat, Lynx, Otter, Ginseng Get 30-day Export Extension

The Endangered Species Scientific Authority (ESSA) has extended the deadline for the export of certain inventories of bobcat, lynx, and river otter pelts and American ginseng roots to November 30, 1977 (F.R. 11/7/77). Previously, export of these inventories was generally authorized only through October 31.

ESSA said export of these inventories may continue after November 30, if evidence is submitted "leaving no reasonable doubt that the furs or roots were in inventory on that date."

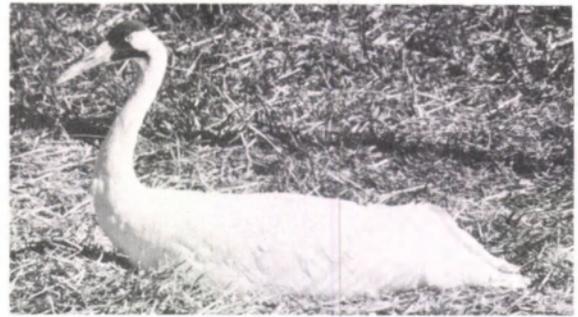
Inventory statements must show the location and quantity of furs or roots by scientific names of species, and the location of records. The statements must be verified by certified public accountants and filed by November 30, 1977, with the Federal Wildlife Permit Office, U.S. Fish and Wildlife Service, Washington, D.C. 20240.

The November 30 deadline does not apply to export under permit from those States and for those species for which export is authorized from the 1977-78 season's harvest (See September 1977 BULLETIN). Revised findings on these exports are to be published shortly.

These and other findings of ESSA do not automatically ensure issuance of export permits. They are also subject to additional findings required by the Federal Wildlife Permit Office.

## SPECIAL REPORT:

# Patuxent's Endangered Wildlife Research Program



## Bird Breeding Aims at Higher Survival in Wild

In spacious pens filled with natural vegetation to provide ample cover, scientists at the Service's Patuxent Wildlife Research Center are holding seven greater sandhill cranes born in captivity earlier this year that are growing up wild.

The greater sandhills (an unprotected species) are being reared solely by their parents in a first-of-a-kind experiment that may soon prove to be a successful method of captive-rearing Endangered whooping cranes (*Grus americana*) so they will have a better chance of surviving when released to the wild.

Despite the pens' relatively small size compared with natural conditions, the parent sandhills are teaching the young birds to fend for themselves and to hide from human intruders. "These birds are just as wild as any cranes I've seen on a refuge," says Dr. Ray C. Erickson, assistant director for endangered wildlife research at the Center. He says the seven will be released next summer at Gray's Lake in Idaho among a flock of other sandhills that breed there. By next fall, scientists should know if the experiment has worked out.

"Hopefully the sandhills will integrate with the flock. They will be one year old on release and should be much better able to cope with other cranes and predators than hand-reared birds," he says. "It's our assumption that, by rearing whoopers with parents in captivity like these sandhills, the heavy first-year mortality in the wild can be avoided and the chicks can then recognize and associate with whooping cranes already at Gray's Lake."

Erickson notes that the mortality rate for whoopers raised from eggs in the wild is running 80 percent or more in the first three years of the release experiment. Only 6 birds survived out of 30 eggs placed in nests of wild sandhill foster parents at Gray's Lake in 1975 and 1976. Three now survive of the 16 eggs from Wood Buffalo National Park in the Northwest Territories, Canada, that were placed in nests at Gray's Lake this year. Coyotes apparently got many of the lost chicks.

### Breeding Species

The parent-rearing experiment is the latest in a series of innovative captive

propagation techniques being developed by Patuxent scientists using surrogates, or "stand-ins," to enhance the recovery of not only whoopers but several other Endangered species. Studies are also in progress to help the Mississippi sandhill crane (*G. canadensis pulla*), which is down to about 40 birds in the wild; Aleutian Canada goose (*Branta canadensis leucopareia*); Andean condor (*Vultur gryphus*), which though itself Endangered is also a

surrogate for the California condor (*Gymnogyps californianus*); Puerto Rican parrot (*Amazona vittata*); masked bobwhite (*Colinus virginianus ridgwayi*); and black-footed ferret (*Mustela nigripes*).

Substitute species employed to test breeding methods for these Endangered or Threatened species include the following: the Florida sandhill crane (*G.c. patensis*) for the Mississippi sandhill; Hispaniolan parrot (*A. ventralis*) for

(continued on next page)

### Center's Mission:

## Basic Research and Captive Propagation

Intensive research on some of the world's rarest and most Endangered species is being conducted in pens and buildings tucked away in an isolated section of the 4,500-acre Patuxent Wildlife Research Center maintained by the U.S. Fish and Wildlife Service near Laurel, Md.

Although the Center lies midway between metropolitan Washington, D.C., and Baltimore, it is well-secluded, occupying former agricultural land and undisturbed forests. The Center is further buffered by the undeveloped lands of the large Fort Meade military reservation to the north and the U.S. Department of Agriculture's Beltsville Research Center to the south.

The Center's Endangered Wildlife Research Program is funded by the Endangered Species Program. The research program, directed by Dr. Ray C. Erickson, has a staff of 24, including 14 scientists headquartered at Patuxent and at nine field stations scattered around the country.

### Mission of the Center

Research programs are underway in support of 46 Endangered and Threatened species. Half of the research studies are intensive efforts and include eight captive propagation projects. Program biologists serve on many of the 59 Endangered species recovery teams that have been established to date.

The mission of the research program is devoted exclusively to obtaining information that will assist in the management of species under the jurisdic-

tion of the Endangered Species Program. Research is conducted in two broad categories:

1. Gaining information on the distributional, behavioral, ecological, physiological, genetic, and pathological characteristics of the species under study to identify and evaluate limiting factors and find means of correcting them.

2. Maintaining captive populations of wildlife species for study and for the production of suitable stock to restore or bolster populations in the wild.

Field study by researchers has led to the proposing of new species for listing or delisting as Endangered or Threatened on the basis of newly developed knowledge of their biological status. The Center also plays an active consulting role in day-to-day problems arising with management programs in the States.

### Launched in 1961

The Endangered Wildlife Research Program has been operating at Patuxent since 1965. It originated in 1961 at the Monte Vista National Wildlife Refuge in Colorado on the upper Rio Grande with studies of lesser and greater sandhill cranes and Aleutian Canada geese. This research program was begun in response to the need for information which could be applied in the preservation of the whooping crane.

Currently, the Endangered Wildlife Research Program is budgeted for \$925,000 in fiscal year 1978. Erickson says that private citizens and conservation groups have contributed about \$24,000 to further the work over the past dozen years.

the Puerto Rican parrot; eastern bobwhite (*C.v. virginianus*) for the masked bobwhite; Embden goose (*A. domestica*) for the Aleutian Canada goose, and Siberian polecats (*M. eversmanni eversmanni* and *M.e. santunini*) and European ferret (*M. putorius*) for the black-footed ferret.

#### Whooper Production

The breeding season for the 22 whoopers at Patuxent starts in March under clock-controlled incandescent floodlights. Because of differences in latitude and elevation between Maryland and the Gray's Lake refuge, as well as the artificially lengthened daylight at Patuxent, the captive birds start laying about a month before the wild birds in Idaho. This has resulted in some eggs being produced at Patuxent before nests are available to receive them at Gray's Lake.

Should the sandhill experiment succeed, this stock of whoopers produced at Patuxent could be parent-reared in pens as wild birds for later release to reduce first-year mortality.

#### Genesis of Whooper Breeding

When research was started on the whooper in 1961, the bird's population was showing little inclination to increase despite management efforts in its behalf. Analysis by Erickson of crane nesting habits and whooper population figures compiled at the Aransas National Wildlife Refuge since 1938 revealed that, although most cranes lay a clutch of two eggs, only about one whooper family in ten arrived at Aransas with more than one chick. He suggested that much of this egg or chick loss might be avoided by removing one egg from each clutch of two in Wood Buffalo National Park. At the same time, a captive propagation program should be initiated in which the removed eggs could be hatched and stock could be produced to bolster the existing population or to establish new populations.



These whooping crane eggs, taken from nests of wild population at Wood Buffalo National Park, Canada, helped build captive flock at Patuxent

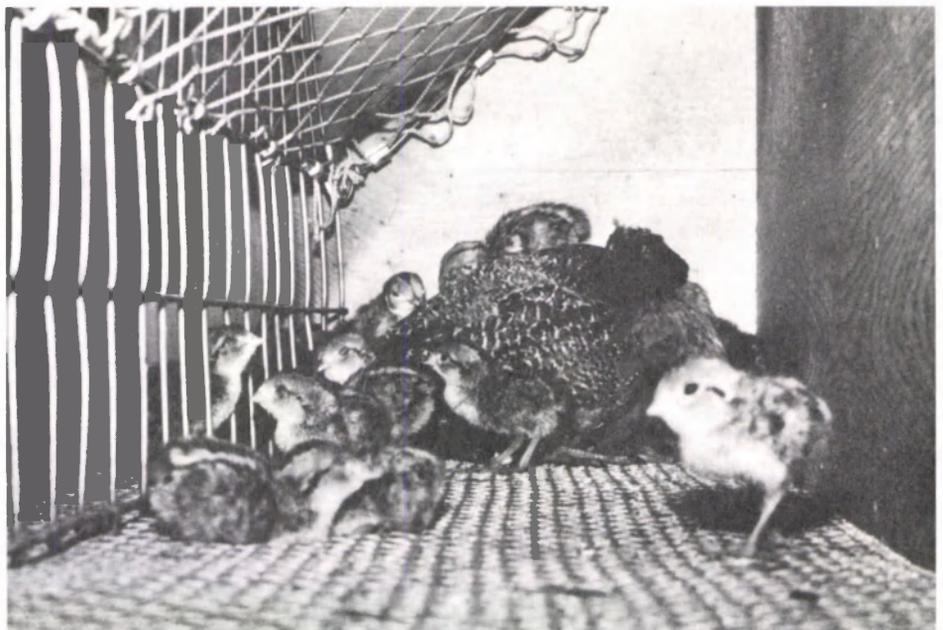


Photo by Steven Dobrott, University of Arizona

Adult male masked bobwhite in "adoption chamber" with chicks hatched at Patuxent and being reared near release site in southern Arizona

Erickson's hypothesis has been substantiated by the unprecedented increase of 26 birds in the wild population during the years that eggs have been removed and transferred to the Patuxent Center or Gray's Lake refuge. The number of cranes in the Wood Buffalo/Aransas population has risen to 69 in the ten years since the egg taking began in 1967, when there were only 43 birds.

#### Masked Bobwhite: Encouraging

This year, Erickson says there have been encouraging signs that a population of captive-hatched masked bobwhites is becoming established in southern Arizona near the Mexican border, despite poor habitat conditions. Patuxent has been producing about 2,000 masked bobwhites a year for the past three years for reintroduction into their former range where they were extirpated around 1900 by overgrazing.

Erickson says overgrazing is still a problem in reducing available forage, and he is hopeful that an area can be set aside for masked bobwhites as part of the National Wildlife Refuge System. As it is, however, this year's brood appears to be of high quality, indicating the transplanted birds are surviving well, and some are breeding despite excess cover removal by grazing.

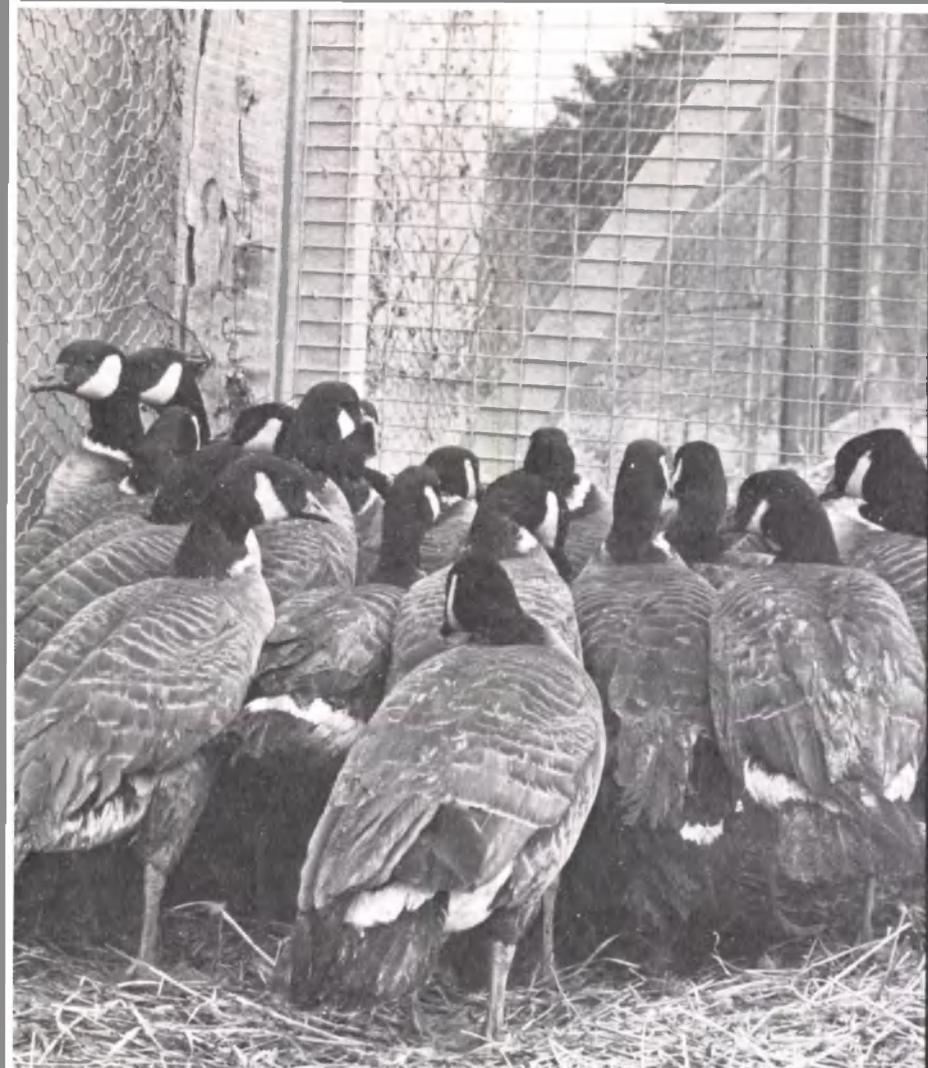
A novel foster parent technique was used by biologist David Ellis to raise the masked bobwhites in captivity. The parents were wild Texas bobwhite cocks (*C.v. texanus*), which were surgically rendered infertile in such a way as to avoid interference with normal hormonal functions which regulate broodiness. At first, the cocks were kept for awhile in a compartmented brooder near enough to call the chicks so that handlers could observe how well they fostered them. Those that performed well were allowed to do the complete brooding. Later, when the birds were older, the cocks taught them how to forage in pens so they could better adapt to the wild.

#### Puerto Rican Parrot

Production of Puerto Rican parrots is on the upswing—thanks in part to the development of an artificial nest structure arrangement that combats nesting competition from pearly-eyed thrashers (*Margarops fuscatus*).

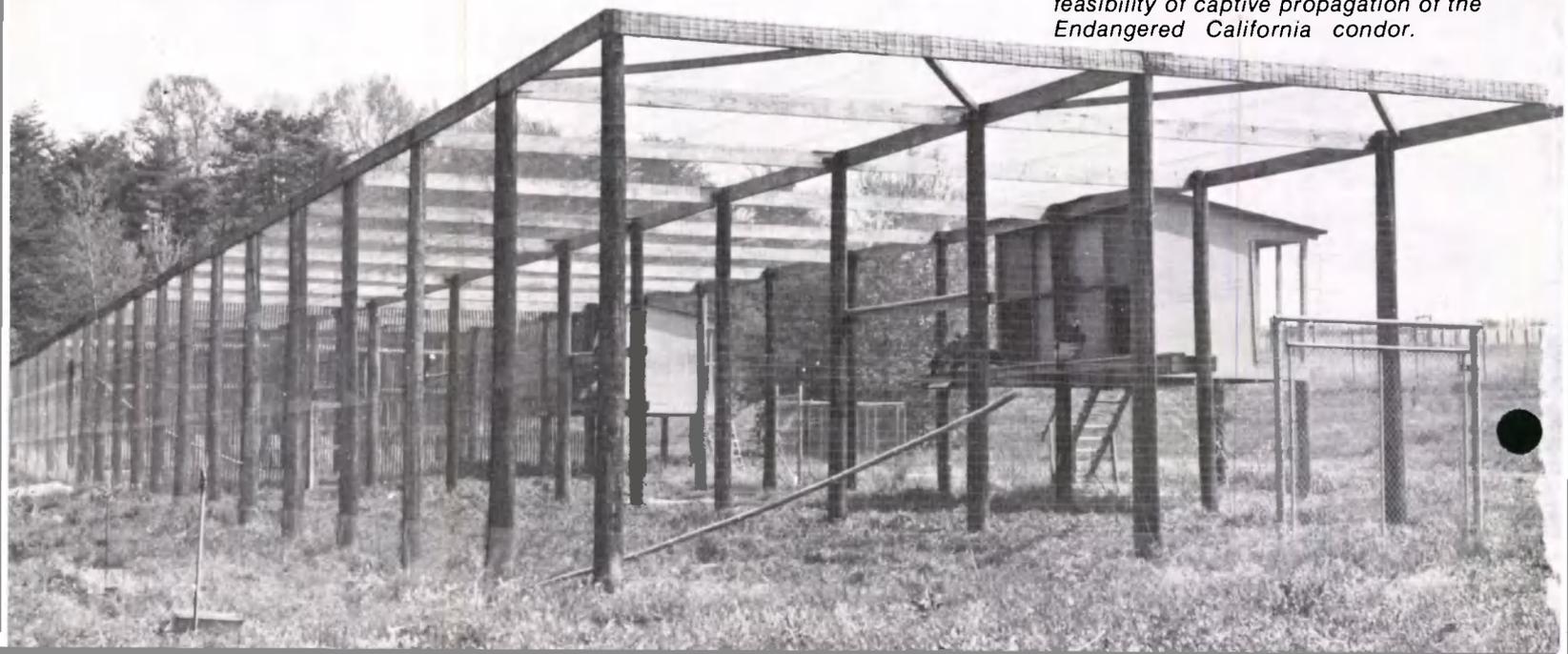
Researcher Noel Snyder and his assistants discovered that artificial cavities placed near parrot nesting holes would be used by pearly-eyed thrashers, which then showed less interest in the parrot nests—particularly those

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### **Aleutian Goose, Condor Breeding Gaining Headway**

*Restocking of Aleutian Canada goose on several small islands in the Outer Aleutians is proceeding with these goslings (upper left) produced at Patuxent. One of the producers is this adult female (above right) shown defending her clutch of eggs in nest. Andean condors bred in pens (below) are destined eventually for release in South America as part of surrogate program to test the feasibility of captive propagation of the Endangered California condor.*





U.S. Fish and Wildlife photo by Noel Snyder

Same nest—two occupants. A pearly-eyed thrasher (left photo) takes over parttime residence of an Endangered Puerto Rican parrot's nest. Researchers are helping the

parrot survive by building new nest structures to help reduce the thrasher's predation.

which were so deep or crooked that eggs or chicks were invisible from the rim of the cavity. Parrots had little success in their natural nesting cavities due to predation, flooding, or other problems. The researchers altered the cavities by deepening, using visor-like rain shields, or by providing elevated artificial nest sites, resulting in consistently higher successes.

This combination of management approaches has allowed the two species to live in relative harmony. Moreover, the resident thrashers are keeping other thrashers out of their territory, thereby protecting the parrots.

Parrot productivity has been improved by removing all eggs from wild nests and artificially incubating them in mechanical incubators. Plaster-of-paris eggs are substituted in the nests, where the parent birds then continue to incubate. After the chicks have hatched and when they are about two weeks old, they are substituted for the dummy eggs.

The parents have readily accepted, fed, and cared for the chicks, with a very high fledging rate. As a result, the number of Puerto Rican parrots has increased from an all-time low population of 13 in 1975 to 22 last spring.

#### Captive Propagation

Erickson emphasizes that captive propagation is not intended to substitute for but to complement the preservation and management of natural habitats and the enforcement of regulations to protect species. However, he points out that close observation of species taken from the wild is enabling scientists to learn far more than could be gained from normal observations in the field. He has found that birds in captivity usually display the same behavioral characteristics as in the wild, although some traits may be muted or accentuated. Some cranes, for example, are reluctant to nest in captivity and must be bred by artificial insemination.

Stock for the captive birds at Patuxent has been acquired from the wild with

little, if any, sacrifice to the parent breeding populations. Scientists have removed eggs from nests of species which readily re-nest, and part of the clutch has been taken from others which customarily lose a substantial number of their eggs or young.

Captive flocks have been expanded by increasing the productivity of females. By removing some eggs regularly as laid, most females can usually be induced to lay additional clutches for artificial incubation. Their productive years have also increased several fold by their being protected from predators, disease, and accidents.

#### Use of Surrogates

Patuxent scientists have pioneered the use of surrogate species to learn how to hold closely related Endangered species in captivity and get them to reproduce. The researchers normally carry out complete veterinary, physiological, nutritional, and husbandry investigations on substitute species. Surrogates also are employed to develop and test flight-restricting techniques, and to test procedures for sexing, breeding, and otherwise maximizing their productivity—thus limiting the risks of experimentation on Endangered species themselves.

#### Restricting Flight

Many of the cranes at the Center are held in open pens, necessitating ways of limiting their flight. Research veterinarians at Patuxent have refined the tenotomy technique that renders birds essentially flightless but maintains the cosmetic appearance of a complete wing. This operation is performed by searing the extensor carpi radialis tendon, the ligaments, and the joint capsule of the wrist with a cautery iron. The cauterized area is then allowed to heal as an open wound, and the wing is kept immobilized by taping it in a folded position for six weeks.

The operation is used on whooping cranes, Mississippi sandhill cranes, and

Aleutian Canada geese which are intended to remain as captive breeders in unroofed pens. Enclosed pens are used for birds reared to be released later in the wild.

Another important function of veterinarian James Carpenter is to closely monitor the health and well-being of all captive stock at Patuxent and to adapt conventional veterinarian techniques to species which are extremely valuable or perhaps even irreplaceable in order to assure them a long reproductive life.

#### Diet Concerns

The staff nutritionist, John Serafin, has developed separate diets for each captive species designed to yield optimum growth, maintenance, and reproduction. They include starter, maintainer, and breeder diets for the cranes that are similar to poultry rations.

Recently, leg abnormalities were observed among crane chicks 2-5 weeks of age, apparently a susceptibility of long-legged, rapidly growing birds. Various diets have been tested to control the problem, and the scientists are now working to determine the cause.

#### Improved Fertility

Artificial insemination of whooping cranes and subspecies of sandhill cranes has improved the fertility of productive pairs and yielded eggs from previously unproductive pairs. Dr. George F. Gee, resident physiologist at Patuxent, is using a variety of techniques, including massage and electromechanical, for collecting semen. Insemination is performed biweekly during the egg-producing season, and sometimes thrice weekly for low producers. Gee has achieved fertility rates of 80 percent in formerly unproductive pairs.

He is working on techniques for preserving semen by freezing. If successful, this may be a valuable process for maintaining genetic variety in Endangered crane and goose populations, as well as for preserving genetic values indefinitely.

## Captive Breeding Time Slipping Away For Black-Footed Ferret



U.S. Fish and Wildlife Service photo by Luther Goldman

One of four black-footed ferrets in captivity peers from nest box

Old age and disease are foiling the efforts of Patuxent researchers to successfully breed two pairs of black-footed ferrets—the only known captive specimens of *Mustela nigripes*—one of the rarest mammals of North America.

The ferrets—all captured in South Dakota several years ago—include an aged male and female (both about 9 or 10 years old), a middle-aged female, and a younger male that is suffering from cancer.

In 1976 and again this year, the older female had litters by the older male. On both occasions, however, four of the five young were still-born, and the fifth was so weak it survived for only a few days.

James W. Carpenter, research veterinarian for the Endangered Wildlife Research Program, said the middle-aged female has cycled normally, but has refused to mate. The second male recently developed an adenoma carcinoma of the tail, which has been removed in an effort to keep the disease from spreading.

### Dwindling Options

With the fertility of the older pair running out—and perhaps affected by a genetic defect that results in the still-births—the second pair is rapidly becoming the last hope to breed black-footed ferrets in captivity, unless by some fortuitous circumstance more healthy specimens are captured.

Carpenter is dubious about the prospects. He and other researchers are pondering a dwindling number of options when the captive ferrets come into heat again in February. The diseased male has been producing semen and, if they can keep him alive until spring, they hope to be able to collect enough for artificial insemination of the younger female.

But there's a problem: No technique has yet been devised for artificially impregnating mustelids except by surgical procedure. Carpenter's group has been experimenting with European ferrets (*M. putorius*) and has devised a procedure for infusing semen into the uterus by making an incision to gain access to the reproductive tract. One European ferret produced a litter 41 days after this surgery, but a second did not bear, presumably because she received a low volume of semen.

### Weighing the Risks

The operation poses some risks, in that it would be the first such attempt on a black-footed ferret.

Complicating the situation is the condition of the ailing male. It may become necessary, if he begins to fail, to collect his semen and store it by freezing. To date, however, no method is known for keeping frozen mustelid semen viable.

"We would have to advance the state of the art very quickly and with very little to work with," says Dr. George F. Gee, a physiologist in charge of artificial insemination projects for Endangered wildlife.

A possibility remains that the aged male could be a semen donor. But whether he will remain in condition this spring is another unanswerable question, as is the question of whether he could produce viable offspring.

All of these factors combined have dimmed the prospects for successful propagation. "When we started out three years ago," says Carpenter, "I was very optimistic. But now it looks pretty grim and disappointing."

### Genetic Defects

From available evidence, the prospects of the few remaining black-footed ferrets in the wild also appear very bleak. Carpenter believes the declining wild population is so low it has led to inbreeding, with resultant genetic defects. If true, not only is the chance of finding healthy specimens for captive breeding reduced, but so is the possibility of a natural rebound in the wild population.

Genetic damage may be at the root of the various problems with the four ferrets in captivity, the scientists feel. Carpenter notes that a fifth black-footed ferret—a five-year-old male captured in 1971—was found to be suffering from a number of degenerative diseases when he died last year. He had developed two types of cancerous tumors, hepatitis, arteriosclerosis, and diabetes.

### Never Abundant

A highly secretive animal in the wild, the black-footed ferret spends most of its life underground in the burrows of prairie dog "towns." Most sightings are made at night when the ferret occasionally appears on the surface or sticks its head from a burrow.

Literature indicates that the species was once distributed over the grassy prairies from southern Alberta and Saskatchewan south to Texas and Arizona, but apparently never was abundant. Over the past century, the ferret has declined with its prey, the prairie dog, which has been subjected to widespread extermination by poisoning as a pest. In recent years, control programs have been reduced in some areas and smaller prairie dog towns have greatly expanded in size.

The larger towns may extend over scores of acres, making sightings of the elusive ferret more difficult. Wildlife biologists also attribute a recent decline in sightings to concern by ranchers that the reported presence of a black-foot on their property would mean stopping prairie dog control measures. In addition, it is thought that private citizens are

(continued on next page)

**Ferret** (continued)

refraining from reporting road kills, which a few years ago occurred frequently, out of unwarranted fears that they may be prosecuted.

**Adaptation Factor**

Carpenter thinks the wild ferrets may be declining because of other factors, including canine distemper virus. He notes the virus is commonly carried by other predators on prairie dog towns—dogs, coyotes, badgers, and raccoons.

Some researchers have hypothesized that the ferret's decline has been exacerbated by its apparent inability to adapt to other forms of prey. They note the ferret's closest relative in appearance, the Siberian polecat (*M. eversmanni eversmanni*), is thriving because it will eat many types of small rodents (marots, ground squirrels, hamsters, jerboas, voles, pikas) and even take small birds on occasion. The polecat will range up to 12 miles in search of food, to survive Siberian winters, whereas the black-footed ferret has become almost entirely dependent on the "captive" prey available in prairie dog towns.

Life underground also may have reduced the ferret's reproductive capacity. Ray C. Erickson, director of the Endangered Wildlife Research Program at Patuxent, suggests that a largely subterranean existence may have modified the ferret's "exposure to and gonadal stimulation by light, surface temperatures, and other factors associated with life above ground," perhaps accounting for the fact that the ferret's litters have numbered about half the 8 to 10 young usually produced by the Siberian polecat.



U.S. Fish and Wildlife photo

**Hawaiian Forest Bird Survey Progressing**

Teams of trained observers are hacking their way through the dense forests of the Hawaiian Islands and gradually gaining a much clearer picture of the status of the State's 19 Endangered endemic forest birds—many of which are near extinction.

The bird surveys have concentrated on Hawaii, the largest island in the group, over the past three years. They were conceived and are led by biologist Mike Scott of the Patuxent Endangered Wildlife Research Program. Other Federal and State agencies and private institutions are cooperating in the survey program.

To perform the surveys, transect trails must be laboriously cut with machete through the tangled undergrowth of uluhe fern, various vines, and other vegetation. The transects are marked at frequent intervals for 8-minute counts of birds seen or heard. Observations also are recorded of other vertebrates and invertebrates and their activities, and of plants, including the extent of bloom of flowers for nectar-feeders.

**Observer Teams**

About a dozen hardy trail-cutters and observers make up the survey teams. They are given intensive preparatory training in bird sight and sound identification, judgment of distance, survey recording methods, and plant species recognition. All of the team members also are tested for visual and auditory acuity.

In addition to ascertaining the abundance (or scarcity) of Endangered birds, the teams are collecting information for the delineation of Critical Habitats, for the evaluation of the effects of goat and pig damage upon native forest plants, and for an assessment of the spread of some forest diseases.

Eventually, the surveys are expected to cover 8 percent of all forests of the Hawaiian Islands, making it one of the most ambitious surveys of its kind ever attempted for Endangered species and their habitats. The results of the study are expected to lay down a solid foundation for future management and research to preserve the Endangered birds.



U.S. Fish and Wildlife Service photo

Rare catch of a black-footed ferret was made by Conrad Hillman in 1973 in southern South Dakota prairie dog town.

## Pending Rulemakings

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

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

### Pending Final Rulemakings

- Bald eagle (modification of status in Lower 48 States)
- Leopard darter (T, C.H.)
- 27 snails (E, T)
- 6 butterflies (C.H.)
- Contra Costa wallflower and Antioch Dunes evening primrose (C.H.)
- 13 plants (E, T)
- Houston toad (C.H.)
- Grizzly bear (C.H.)
- Gray wolf (reclassification to T in Minn., C.H.)
- Florida pine barrens treefrog (E, C.H.)
- Golden coqui (T, C.H.)
- 15 crustaceans (E, T)
- Whooping crane (C.H.)
- Black toad (T, C.H.)
- Atlantic salt marsh snake (T)

### Pending Proposed Rulemakings

- Ozark big-eared bat (E)
- Virginia big-eared bat (E)
- African elephant (S.O.A. to Asian elephant)
- 10 North American beetles (E, T)
- 2 harvestmen (E, T)
- 3 mussels (C.H.)
- Rocky Mountain peregrine falcon population (C.H.)

## BOX SCORE OF SPECIES LISTINGS

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals .....	36	227	263	2	17	19
Birds .....	68	144	212	2		2
Reptiles .....	10	46	56	2		2
Amphibians .....	4	9	13	1		1
Fishes .....	30	10	40	9		9
Snails .....		1	1			
Clams .....	23	2	25			
Crustaceans .....						
Insects .....	6		6	2		2
Plants .....	4		4			
<b>Total .....</b>	<b>181</b>	<b>439</b>	<b>620</b>	<b>18</b>	<b>17</b>	<b>35</b>

Number of species currently proposed: 101 animals  
1867 plants (approx.)

Number of Critical Habitats proposed: 34

Number of Critical Habitats listed: 20

Number of Recovery Teams appointed: 59

Number of Recovery Plans approved: 9

Number of Cooperative Agreements signed with States: 20

October 31, 1977

- Colorado squawfish (C.H.)
- Woundfin (C.H.)
- Virgin River chub (E, C.H.)
- 2 Hawaiian cave invertebrates (E, T)
- Leatherback sea turtle (C.H.)
- Grevy's and Hartmann's mountain zebras (E)
- 4 Alabama and Georgia fishes (E, C.H.)
- 5 Southeastern fishes (T, C.H.)

### Pending Notices of Review

- African elephant
- Mexican duck
- 10 U.S. reptiles

Abbreviations: E = Endangered, T = Threatened, C.H. = Critical Habitat, S.O.A. = Similarity of Appearance

## No Rulemakings in October

The BULLETIN customarily publishes summaries of all new rulemakings by the Service concerning Endangered or Threatened species during the month preceding the date of the BULLETIN's publication. During the month of October, no new rulings were issued by the Service in the *Federal Register*.



## ENDANGERED SPECIES TECHNICAL BULLETIN

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



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