

# ENDANGERED SPECIES

## Technical Bulletin

Department of Interior, Fish and Wildlife Service  
Washington, D. C. 20240

### Listing Action Proposed During October 1990 for Nine Species

Four animals and five plants were proposed by the Fish and Wildlife Service during October 1990 for listing as Endangered or Threatened species. If the proposals are approved, the following taxa will receive Endangered Species Act protection:

#### Argali (*Ovis ammon*)

An Asian animal related to the North American bighorn sheep (*Ovis canadensis*), the argali is the largest species of wild sheep in the world. An adult male argali can weigh up to 310 pounds (140 kilograms) and stand 49 inches (125 centimeters) high at the shoulder. Its massive spiral horns are up to 75 inches (190 cm) long and 20 inches (50 cm) in circumference. His-

torically, the argali's range included parts of Soviet Central Asia, southern Siberia, Mongolia, Nepal, north-central and western China (including Tibet), and the Himalayan sections of Afghanistan, Pakistan, and India. Argali generally forage in broad valleys, high pastures, or cold deserts, although they sometimes seek refuge in adjacent mountains.

In 1976, most taxa on Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) were listed by the Service under the Endangered Species Act as Endangered. Among these was one subspecies of the argali, *O. a. hodgsoni*. Accordingly, the importation of *O. a. hodgsoni* (including live animals, parts, and trophies) into

the United States is prohibited except by Federal permit for certain conservation purposes.

In 1988, a legal dispute arose when trophies of argali killed in the Gansu Province of China were confiscated by U.S. Fish and Wildlife Service law enforcement agents at the San Francisco port of entry on the grounds that they were from the protected subspecies *O. a. hodgsoni*. This charge was challenged by the importers, who stated that the animals had belonged to a different, non-endangered subspecies. Although the importers ultimately regained the trophies, the Service published a notice in the November 24, 1989, *Federal Register* stating that the specimens had been correctly identified as *O. a. hodgsoni*. At the same time, the Service published another notice that it was initiating a review of the taxonomy, distribution, and status of all argali subspecies.

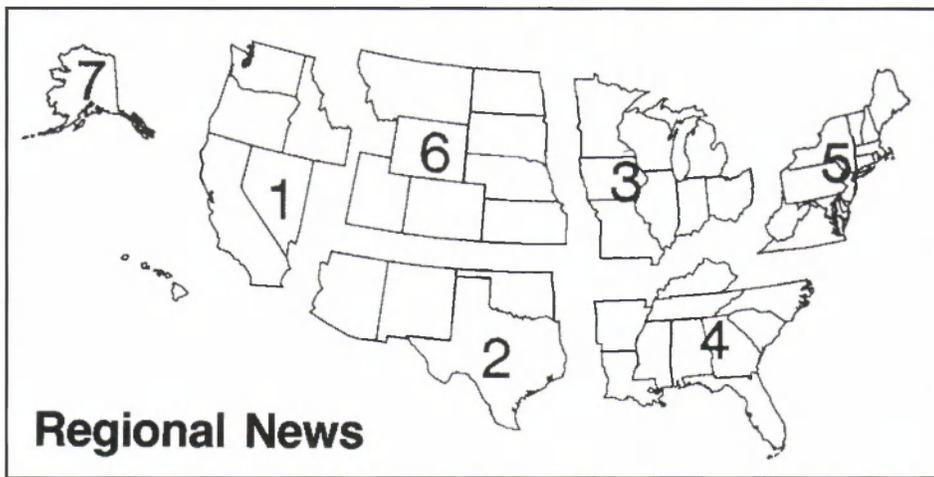
Despite some disagreement, most comments received during the review indicated 1) that the species *O. ammon* has experienced a general decline, 2) that some, if not all, populations are in serious jeopardy, and 3) that the argali is vulnerable to a number of problems, notably hunting and competition with rapidly expanding herds of livestock for the habitat's limited forage and water. Some comments indicated declines even in the heart of the species' range, within regions that were once considered too remote for significant human impacts. As a re-

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argali

© Galen Rowell/Mountain Light



## Regional News

**Region 1** - On October 2, one of the free-flying female Andean condors (*Vultur gryphus*) temporarily reintroduced into southern California was re-

captured by Fish and Wildlife Service biologists after she was discovered to be acting abnormally. The biologists found that she was bleeding from the

mouth, and had numerous lacerations and several broken secondary feathers. The cause of her injuries was not determined. After the bird was treated and had recovered, she was released back into the backcountry of Ventura, California, in late October. Although she now appears to be healthy and is acting normally, her position in the condor social order has changed. Before she was captured, this bird held the dominant position of the six Andean condors that were released earlier this year, but now she is subordinate to all of the other birds.

\* \* \*

A collared 3 1/2-year-old female grizzly bear (*Ursus arctos horribilis*) from the Threatened Selkirk, Idaho, population was illegally killed by British Columbia hunters in September. The bear was killed about 2 miles (3 kilometers) north of the U.S./Canada border along Maryland Creek. British Columbia officers apprehended the hunters along with photos of the dead bear.

\* \* \*

The Service and the Smithsonian Institution's National Zoological Park in Washington, D.C., signed a cooperative agreement on September 25 to transfer captive Morro Bay kangaroo rats (*Dipodomys heermanni morroensis*) from the Service's San Simeon, California, Field Station (part of the National Ecology Research Center) to the zoo. This agreement will enable the zoo to conduct research on developing a captive breeding program for this Endangered kangaroo rat. The animals were transferred on November 19.

\* \* \*

Service and California Department of Fish and Game biologists cooperated in a survey for the Endangered light-footed clapper rail (*Rallus longirostris levipes*) at Seal Beach Naval Weapons Station in southern California. The high tide count was conducted from canoes on November 2 and yielded a total of 69 birds — the

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# The Exotic Zebra Mussel — A New Threat to Endangered Freshwater Mussels

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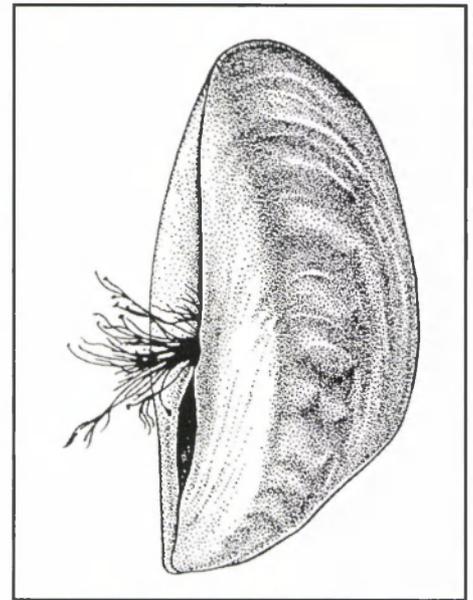
Accidental or deliberate introductions of exotic species can have devastating impacts on native ecosystems. One of the latest biological invaders to arrive in the United States is the zebra mussel (*Dreissena polymorpha*). This small, freshwater mollusk has the potential to spread throughout much of North America and create serious problems for various aquatic organisms, particularly native endangered mussels.

The problem most likely began in 1986 with the accidental discharge of free-swimming zebra mussel larvae, known as veligers, into southern Lake St. Clair (a Great Lakes interconnecting channel) in ballast water from European freighters. By June 1988, zebra mussels were found encrusted on native mussels collected from Lake St. Clair. High densities of zebra mussels are now found attached to a variety of firm surfaces from Lake St. Clair through Lake Erie.

Zebra mussels have since been discovered encrusting the shells of a vari-

ety of native mussels, including the federally-listed white cat's paw (*Epioblasma sulcata delicata*) and the State-listed northern riffleshell (*Epioblasma torulosa rangiana*), clubshell (*Pleurobema clava*), salamander mussel (*Simpsonaias ambigua*), rayed bean (*Villosa fabalis*), and purple lilliput (*Toxolasma lividus*), possibly threatening their survival in the Great Lakes. Effective dispersal capabilities may enable the zebra mussel to invade other drainage basins and imperil rare native mussels throughout the United States.

The zebra mussel is native to freshwater drainages of the Black, Caspian, and Azov Seas. It invaded northern Europe after canals connecting rivers in the watersheds of the Baltic Sea and Black-Caspian-Azov Seas were constructed in the early eighteenth century. This species is sensitive to salinity of over 6 parts per thousand. Shells of the zebra mussel are similar to those of the marine blue mussel (*Mytilus edulis*), but smaller: less than



drawing by Margaret Vanbolt

**zebra mussel showing byssal threads used for attachment to native mollusks and other firm substrates**

40 mm long, 20 mm high, and 25 mm wide. They typically are marked with zebra-like patterns of white to cream background and green to dark brown rays. Because zebra mussels are filter feeders with voracious appetites, they remove a great deal of phytoplankton from the water, thereby affecting food web dynamics and competing with herbivorous zooplankton, certain fish, and native mussels for food.

Zebra mussels disperse at larval, juvenile, and adult stages of their life cycle. A female has a relatively high fecundity of about 35,000 eggs per year. After being fertilized externally, eggs develop into veligers that drift freely in water for 10 to 15 days. This method enables the species to disperse downstream and throughout lakes.

The veligers develop quickly into the settled (post-veliger) stage and produce numerous filaments (byssal threads) to attach themselves to any firm surface on which they settle. Al-

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photo by Donald Schloesser

**native mussel encrusted with zebra mussels**

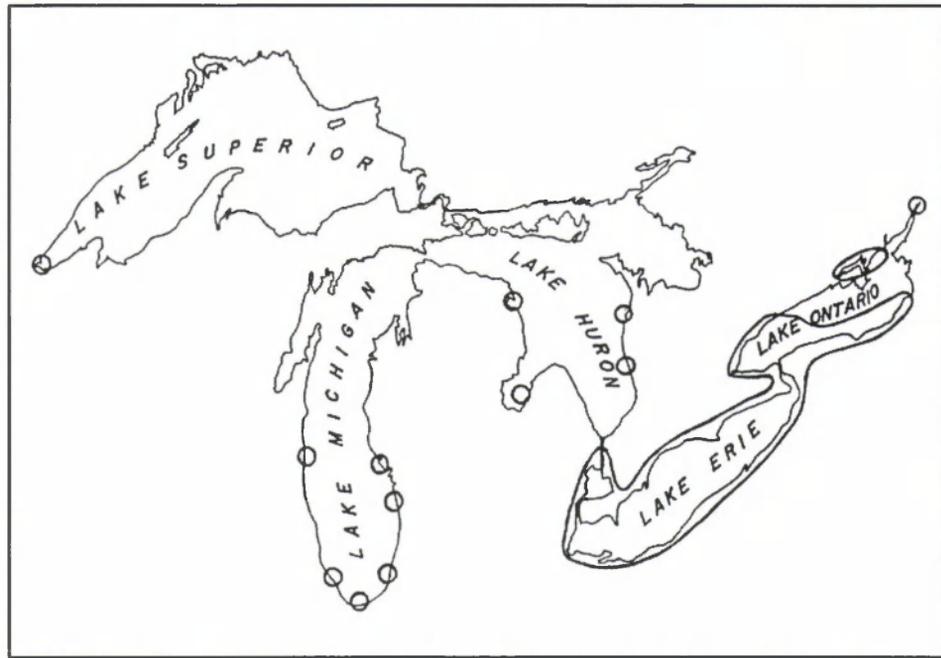
## Zebra Mussell

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though calcareous materials, such as limestone, concrete, and the shells of other mussels, are preferred substrates, they can also encrust other surfaces, including hulls of fishing boats and ships. In this manner, juvenile and adult zebra mussels can be carried upstream into other parts of the Great Lakes and into major tributaries of the Mississippi and Hudson River systems by way of connecting channels. They can also survive out of water for several days, and thus potentially can be transported to inland lakes and other river systems on trailered boats and even on the feet of waterfowl.

Since their accidental introduction into North America, zebra mussels have colonized the waters between Lake St. Clair and western Lake Ontario. Populations have also been found in eastern Lake Ontario, the St. Lawrence River, the westernmost portion of Lake Superior, and at several locations in Lakes Michigan and Huron. Further, the zebra mussel is now established in the Erie Canal from Buffalo, New York, as far east as Palmyra. In addition, small dead zebra mussels have been found attached to a boat hull with an Ohio license in Dale Hollow Reservoir, Tennessee.

Fish and Wildlife Service biologists have collected both live and freshly dead native mussels encrusted with ze-



**Distribution of zebra mussels in the Great Lakes.**

bra mussels. Zebra mussels form successive layers 3-5 cm thick at an average of 6,500 individuals per individual native mussel. The thickest portions of these layers occur on the posterior ends of the native mussel shells, close to the incurrent siphons where water is drawn in for filter feeding. The zebra mussels appear to remove particles from water currents being drawn into native mussels, thus depriving them of food. All 38 freshwater mussels in the United States listed by the Service as Endangered or Threatened face possible extinction if zebra mussels successfully invade their habitats and colonize in high densities.

Zebra mussels have been found encrusted on crayfish, snails, and submerged aquatic plants. The Service recommends that firm surfaces of endangered aquatic organisms, such as mollusks, arthropods, turtles, and plants be checked for the presence of zebra mussels. Please report any geographic range extensions of the zebra mussel to the U.S. Fish and Wildlife Service, National Fisheries Research Center—Great Lakes, 1451 Green Road, Ann Arbor, Michigan 48105 (telephone 313/994-3331 or FTS 378-1331).

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## Leaders Named for Northern Spotted Owl Recovery Team

The Department of the Interior recently took the first step toward development of a recovery plan for the northern spotted owl (*Strix occidentalis caurina*), which was listed June 26, 1990, as Threatened (see feature in BULLETIN Vol. XV, No. 7). On November 21, Secretary of the Interior Manuel Lujan named Marvin Plenert, the Fish and Wildlife Service's Portland Regional Director, as Team Leader for the Northern Spotted Owl Recovery Team, and Donald Knowles, Deputy Under Secretary of the Inte-

rior, as Team Coordinator. The team will be directed to develop a plan to restore the northern spotted owl to a secure status.

As Team Leader, Mr. Plenert will have the primary responsibility for managing the team, preparing a work plan, coordinating staffing and administration, drafting the recovery plan, and ensuring public participation. Mr. Knowles, as Team Coordinator, will be Secretary Lujan's representative and provide policy guidance to the team.

Secretary Lujan has invited the Governors of California, Oregon, and Washington to each nominate a representative to serve on the recovery team. Similar requests went to the Secretary of Agriculture; the Assistant Secretaries of the Interior for Fish and Wildlife and Parks, Land and Minerals Management, and Policy Management and Budget; the Interior Department's Office of the Solicitor; and the Directors of the Fish and Wildlife Service, National Park Ser-

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# Research on the Okaloosa Darter

## Focuses on Competition and Habitat Use

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Okaloosa darters (*Etheostoma okaloosae*) are small, freshwater fish that are found only in six small stream systems that empty into Choctawatchee Bay in the western part of the Florida panhandle. Because of threats to this restricted habitat from the effects of siltation and small impoundments, the Okaloosa darter was listed in 1973 as an Endangered species.

These small fish, members of the family Percidae, grow only 1.2 to 1.6 inches (30 to 40 millimeters) in total length and live no more than 2 years. They are not as spectacularly colored as many other darters. Adults usually have brown blotches and flecks on their sides, sometimes with reddish or greenish tints. Their diet consists primarily of immature aquatic insects, notably midge fly larva.

Streams inhabited by the Okaloosa darter are 4 to 40 feet (1.2 to 12.2 meters) wide with sandy bottoms, low to moderate gradients, persistent groundwater discharge, and clear to slightly tea-colored water. Because of strong, consistent groundwater discharges, most of the streams are cool, fluctuate relatively little in water temperature, and have moderate current. Sunlit stream reaches usually have beds of aquatic macrophytes (submerged aquatic plants), making these areas better Okaloosa darter habitat. Shaded reaches lack macrophytes, although they often have detritus and woody debris along stream margins. The darters require habitat with cover (macrophytes and detritus), shallow depths, and moderate current.

Studies of the Okaloosa darter are an important part of the endangered species research program at the U.S. Fish and Wildlife Service's National Fisheries Research Center in Gainesville, Florida. Current studies are con-

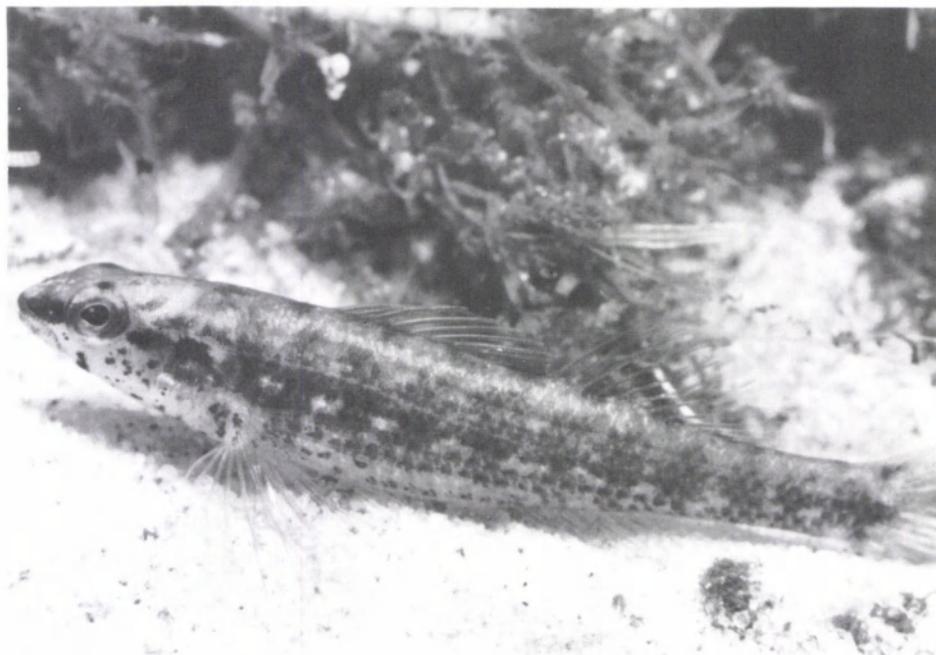


photo by Noel M. Burkhead

*Etheostoma okaloosae*

centrating on distribution patterns, spawning, and interactions with the introduced brown darter (*Etheostoma edwini*).

### Competition

In the 1950's and early 1960's, the blackbanded darter (*Percina nigrofasciata*) was the only other darter known to exist in the range of the Okaloosa darter. (Native to this area, the blackbanded darter poses no threat to the Okaloosa darter.) In 1964, however, the brown darter was discovered there for the first time. This species was probably introduced to the range of the Okaloosa darter in the early 1960's by anglers releasing bait fish from buckets. Since that time, competition from the brown darter has become one of the main threats to the survival of the Okaloosa darter.

The brown darter has spread throughout the lower reaches of the

Rocky Bayou tributaries and gradually displaced the Okaloosa darter. Collection records of both darters at some stream sites revealed that displacement occurred over 3 to 4 years. The elimination of Okaloosa darters from the lower Rocky Bayou drainage is the species' most significant loss of habitat. The ways by which Okaloosa darters are displaced by brown darters have not yet been identified, nor have the reasons that this displacement has so far been confined to the lower reaches of the Rocky Bayou drainage.

The two most likely hypotheses for the displacement are (1) ecological competition (i.e., competition for spawning sites, living space, food) and (2) habitat degradation that is intolerable to the Okaloosa darter but not to the brown darter. The first hypothesis is supported by the finding that most of the available habitat where the Okaloosa darter has been displaced by the brown darter, as well as where the

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## Okaloosa Darter

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darters coexist, is of good to moderate quality. It is further reinforced by the absence of both darters from one moderately degraded stream reach and by a seemingly high overlap of the darters in microhabitats.

The threat by the introduced brown darter to the Okaloosa darter is compounded by the absence of techniques to selectively eradicate one fish species without harming others.

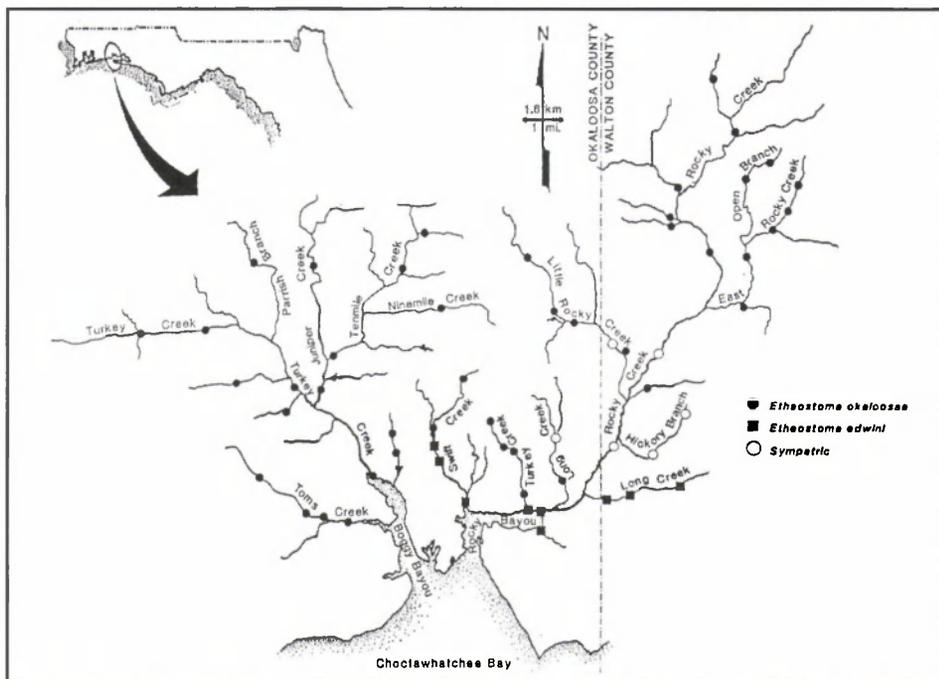
## Habitat Degradation

Almost all of the Okaloosa darter's range is on Eglin Air Force Base. The base encompasses most of Okaloosa and Walton Counties. Soil erosion from borrow pits, road crossings, old railroad beds, and denuded areas on the base has degraded Okaloosa darter habitat. At some sites, heavy rainfall washes large amounts of silt into streams. Eglin Air Force Base is one of the largest non-nuclear weapons-testing facilities in the world, and portions of several streams inhabited by Okaloosa darters are in weapons-testing areas. Chemicals from spent explosives may periodically contaminate the streams. Runoff from insecticides and herbicides, and the application of liquified sewage on sprayfields in the headwaters of several streams within the Okaloosa darter's range, also may degrade the aquatic habitat.

The Services' Panama City, Florida, Field Office and the Gainesville National Fisheries Research Center have assisted the Air Force in identifying and mitigating some of the habitat loss in streams that are inhabited by the Okaloosa darter.

## Research Activities

Research on Okaloosa darters is taking place in both the field and the laboratory. Because of good water clarity, biologists can use snorkeling equipment to observe spawning in the streams. Spawning has been recorded on videotape, and preliminary com-



parisons indicate no differences between reproductive behaviors in the field and in a 4' x 8' tank in the lab. The habitat the Okaloosa darter uses for spawning is the same it uses for feeding and shelter. The reproductive behavior of the brown darter and its comparison with the reproductive behavior of the Okaloosa darter are still under investigation.

Future research will examine the microhabitats of both species in stream reaches where they occur separately and where they coexist. In particular, we will be looking for shifts by one of the darters in the use of one or more specific habitat features where the darters occur together. The detec-

tion of such a shift is expected to disclose a specific feature of competition. Displacement of the Okaloosa darter may not be a function of competition over habitat. However, the habitat overlap and fluctuating ratios of the two species in sympatry suggest the importance of examining habitat preference.

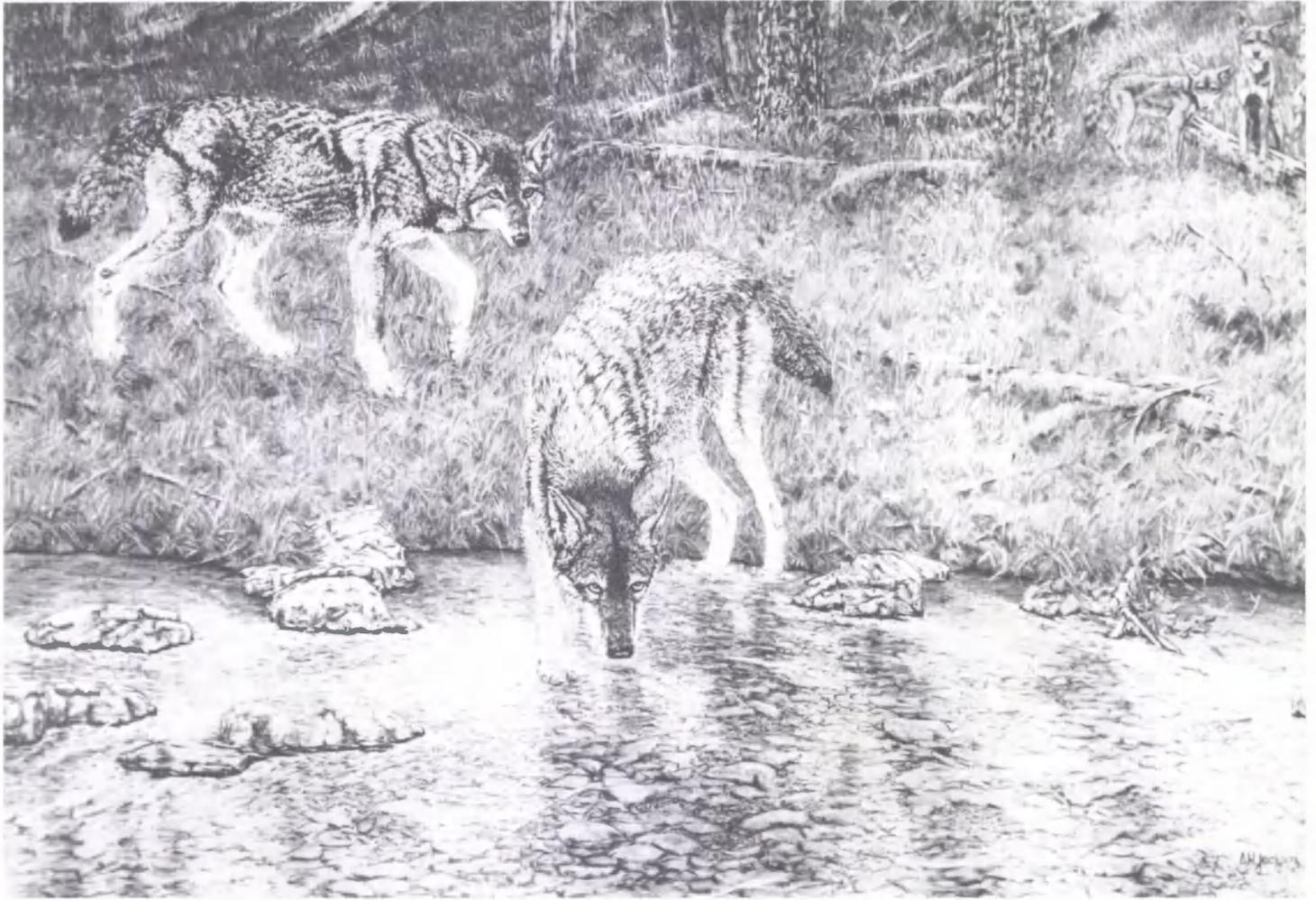
Data gathered in these research programs will provide a vital baseline for evaluating future population trends and for developing plans to address the continuing threats to the Okaloosa darter. The ultimate goal of the research is to improve the status of this fish and bring about its recovery.

## Final Rule Published for the Cahaba Shiner

The Cahaba shiner (*Notropis cahabae*) is a small, silvery fish about 2.5 inches (6.4 centimeters) long. It is known to occur only in the Cahaba River in central Alabama, where it is found in large shoal areas of the main channel. Small, scattered populations of the shiner are found along 60 miles (97 kilometers) of the river, with the greatest number of fish surviving in a 15-mile (24-km) stretch. Water pollution has reduced the historic range of the Cahaba shiner by over 20 percent and continues to threaten the

survival of the species. The shiner and its habitat have been adversely affected by sewage flows from water treatment plants; runoff from surface mining and limestone quarries; siltation from construction, agriculture, and forestry activities; and wastewater discharges from methane gas wells. The Service proposed to list the Cahaba shiner as Endangered in the March 19, 1990, *Federal Register* (see BULLETIN Vol. XV, No. 4), and the final rule was published October 25.

## Artist Donates Prints For Red Wolf Recovery



In an effort to assist the Fish and Wildlife Service's red wolf (*Canis rufus*) recovery effort, nationally recognized wildlife artist Steve Jackson recently donated 500 signed and numbered prints from his original painting of this Endangered animal. This is a limited edition color print, measuring 20 by 26 inches (51 by 74 centimeters). The first 500 of the 1,000 prints in the limited edition are being made available to the red wolf recovery program. Proceeds from the sale of the prints, expected to net \$50,000, will be matched by a \$40,000 challenge grant from the National Fish and Wildlife Foundation. The funds will be dedicated solely to the red wolf recovery effort.

Secretary of the Interior Manuel Lujan accepted print number one from the artist on October 16 at the

National Zoological Park in Washington, D.C. The presentation coincided with the opening of the zoo's red wolf exhibit. (The National Zoological Park is the 19th zoo to participate in the red wolf captive breeding program.) In accepting the print, Secretary Lujan said, "The red wolf recovery program is an excellent example of what can be accomplished when Federal, State, and local governments, private organizations, and the public pitch in to restore one of our Nation's Endangered wildlife species. By making these generous contributions to the program, Mr. Jackson and the Foundation are displaying the American spirit of stewardship so vital in meeting the many environmental challenges facing us today."

An information packet and brochure on the red wolf painting and

recovery effort can be obtained by contacting the Red Wolf Recovery Project, Alligator River National Wildlife Refuge, P.O. Box 1969, Manteo, North Carolina 27954 (telephone: 919/473-1131). Individuals interested in purchasing the red wolf print should send a check for \$110 (which includes \$10 for postage and tax) to the same address. The check should be made out to the Coastal Wildlife Refuge Society and should note on the left corner that it is for the red wolf print.

\* \* \*

The red wolf recovery effort continues to progress. (For the last general update of the recovery effort, see BULLETIN Vol. XIV, Nos. 11-12). As of November 8, there were a total of 130 red wolves in the world. Six-

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## Red Wolf Recovery

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teen red wolves are in the wild at Alligator River National Wildlife Refuge, of which 15 have radio collars or implanted radio transmitters. The signs of another pup have been observed at the refuge, although it has not actually been seen. Of particular significance, 6 of the wolves are extensively using private lands adjacent to the refuge on which the Service has conservation easements. No problems have been reported by the private landowners. Nine more wolves are being acclimated in pens at the refuge's captive breeding facility.

The red wolf captive propagation program is also continuing to expand. With the addition of the Knoxville,

Tennessee, Zoo and the Tennessee Valley Authority's (TVA) Land-Between-the-Lakes National Recreation Area, by the end of the winter there will be 21 red wolf captive breeding facilities in the country. The wolves on most of the island propagation sites are doing well. There are two free-ranging wolves on Bulls Island, South Carolina, four on Horn Island, Mississippi, and four on St. Vincent National Wildlife Refuge, Florida.

In October, all of the red wolves from the Durant Island, North Carolina, propagation site died or left the island. This privately owned island is off the coast of the Alligator River National Wildlife Refuge. The adult male attempted to swim to the mainland and drowned. The following

week, the adult female successfully swam across to Alligator River National Wildlife Refuge, where she is now. Her three pups then attempted to leave the island, but two of the pups drowned and the third is presumed dead. Biologists do not know why the wolves left the island. Another attempt will be made to place wolves there next year.

Acclimation pens are now being built in Great Smoky Mountains National Park in North Carolina for the second mainland release of red wolves. Two pairs of red wolves are expected to be brought into the park at the end of January 1991 (see BULLETIN Vol. XV, No. 6). One of those pairs and their pups should be released into the wild by the end of the summer.

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## Listing Proposals

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sult, the Service has proposed to change and expand its classification of the argali under the Endangered Species Act (F.R. 10/5/90). Instead of one subspecies, *O. a. hodgsoni*, being listed as Endangered, the entire species would be classified rangewide as Threatened. However, alternative classifications are being considered, including designation of several populations, or the entire species, as Endangered.

Excessive commercial and subsistence hunting of argali for meat has been blamed by some people for much of the species' decline. There have also been reports of uncontrolled killing of argali by military forces after the Chinese occupation of Tibet. However, the Service recognized in the listing proposal that there is a reasonable argument for the proposition that regulated sport hunting may provide economic incentives for conserving certain wildlife populations. These incentives may be direct, by generating funding for essential conservation measures through licensing fees, or indirect, by focusing governmental attention on the need to protect species of economic value. In its

October 5, 1990, listing proposal, the Service issued a call for information on how, and to what extent, countries within the argali's range could use managed sport hunting programs to benefit the species. Any suggestions on the advisability and enforceability of a special rule to allow the importation of argali are welcome as well. If the data indicate that regulated sport hunting benefits the species as a whole, a special rule permitting the importation of trophies may be published. On the other hand, the Service emphasizes that further review of the situation may lead to a final rule that lists the entire species *O. ammon* as Endangered and places a total ban on importation.

Comments and information regarding the argali proposal should be sent to the U.S. Fish and Wildlife Service, Office of Scientific Authority, ARLSQ 725, Washington, D.C. 20240, by February 4, 1991.

## Silver Rice Rat

The lower Florida Keys population of the rice rat (*Oryzomys palustris natator*) was proposed by the Service on October 25, 1990, for listing as Endangered. This population is

known popularly as the silver rice rat and is considered by some zoologists to be a distinct species, *Oryzomys argentatus*. The small rodent has a generalized rat-like appearance but can be distinguished by its silver-colored fur and elongated nasal bones. Unlike the common rats (*Rattus* spp.) found in urban areas, the silver rice rat requires undeveloped mangrove forests and salt marsh habitat.

The ancestors of the silver rice rat may have colonized the Florida Keys during the Pleistocene, when sea levels were lower than at present. Later, rising seas isolated these and other animals on small islands, where natural selection resulted in a number of distinct taxa. In recent decades, extensive commercial and residential development in the Florida Keys has sharply reduced the already limited amount of wildlife habitat. Among the vulnerable animals on these islands that are already listed as Endangered are the Key deer (*Odocoileus virginianus clavium*) and the Lower Keys rabbit (*Sylvilagus palustris hefneri*).

Federal protection for the silver rice rat first became an issue in 1980,

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## Listing Proposals

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when the Service was petitioned by the Center for Action on Endangered Species to list the animal as Endangered. From 1982 through 1988, the Service published annual findings that a listing proposal for the silver rice rat was "warranted but precluded" by other listing actions of higher priority. At that time, the Service treated the animal as a full species. However, after receiving a report questioning the specific identity of the silver rice rat, the Service announced in 1989 that it was no longer considering the animal for Endangered Species Act protection. Later that year, the Sierra Club Legal Defense Fund, Inc., filed a suit challenging the Service's decision and charging that the option of listing the silver rice rat as a "distinct vertebrate population" had not been adequately addressed. As a result, the Service agreed to reconsider its earlier decision. Although there is continuing disagreement as to whether or not the silver rice rat is a valid species or subspecies, the Service now believes that it does qualify for a listing proposal as a distinct population.

The silver rice rat is already listed by Florida as endangered, but its habitat does not receive protection under State law. If the Service's listing proposal is approved, the animal and its habitat will be protected from jeopardy by any action funded, approved, or carried out by a Federal agency.

### Uncompahgre Fritillary Butterfly (*Boloria acrocneuma*)

Discovered on Mount Uncompahgre, Colorado, in 1978, this insect has the smallest known range of any North American butterfly species. It has been verified from only two sites in the San Juan Mountains of southwestern Colorado. The type locality on Mount Uncompahgre is managed by the U.S. Forest Service (USFS), and the other colony (whose location is not widely known) is administered



photo by Paul Opler

*Uncompahgre fritillary butterfly*

by the Bureau of Land Management (BLM). Reports of two other colonies have not been confirmed.

The Uncompahgre fritillary is a small butterfly, with a wingspan of only 1 inch (2.5 centimeters). Males have rusty brown wings criss-crossed with black bars, and the females are somewhat lighter in color. These butterflies inhabit sites above 13,200 feet (4,040 meters) in elevation, and all known colonies are associated with large patches of snow willow (*Salix nivalis*), the species' larval food plant. The butterflies apparently have a 2-year life cycle.

Field surveys during 1987 and 1988 indicate that the species' numbers have declined precipitously since 1978. The current population is estimated to total well under 1,000 individuals. Both the USFS and BLM have eliminated livestock grazing on the two known sites, and there are no logging or mining operations in these areas. Collecting is the main threat.

Because it is rare and one of the few butterfly species discovered in the past half-century, the Uncompahgre fritillary is very attractive to many collectors. Specimens of *B. acrocneuma* have been offered for sale at prices of over \$100 for males and even more for fe-

males. This butterfly's sedentary nature, weak flying ability, and tendency to fly low to the ground make it easy to collect. Biologists monitoring the species estimate that up to 20 percent of the Mount Uncompahgre population was taken by collectors in 1981 alone.

The Uncompahgre fritillary butterfly faces several other potential dangers, including climatic change. This species, which exists only on the northeast-facing slopes of the highest, wettest peaks in southwestern Colorado, apparently requires a cool, moist microhabitat. Results of 1987-1988 surveys indicate that several recent years of drought have stressed the overall population. When a species is reduced to such low numbers, long-term genetic viability is yet another concern.

In 1984, the USFS and BLM signed an interagency agreement to conserve the Uncompahgre fritillary butterfly, but funding for its implementation has been limited. Although the Fish and Wildlife Service has been working with both agencies since 1987 on research and monitoring, these efforts have not removed threats to the butterfly's survival. Accordingly, the

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## Listing Proposals

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Service has proposed to list the Uncompahgre fritillary as an Endangered species (F.R. 10/15/90).

### Cumberland Pigtoe Mussel (*Pleurobema gibberum*)

This small freshwater mussel, which rarely exceeds 2.4 inches (60 millimeters) in length, has a shell that is a dark mahogany color on the outer surface and peach to orange on the inside. Like many mussels, little is known about the Cumberland pigtoe mussel's life history. It is endemic to the Caney Fork River system, a tributary of the Cumberland River, in central Tennessee. The mussel is found primarily in riffle areas with sand and gravel, where it filters food from the flowing water.

The Service has proposed that the Cumberland pigtoe mussel be listed as Endangered because of its restricted range and the vulnerability of the remaining populations (F.R.10/15/90). Although the species may once have been widely distributed in the Caney Fork system, it is now known to occur in short reaches of only four tributaries of the Caney Fork: the Barren Fork in Warren County, Calfkiller River in White County, Cane Creek in Van Buren County, and Collins River in Warren and Grundy Counties. The mollusk's decline is due to the construction of impoundments, and to siltation and water pollution caused by coal mining, poor land use practices, and waste discharges. The remaining populations are vulnerable to continuing declines in water quality.

### Two Puerto Rico Orchids

Two species of orchids native to the island of Puerto Rico were proposed on October 10 for listing as Endangered:

- *Lepanthes eltorensis* is a small epiphytic orchid. It grows on moss-covered tree trunks in the very rainy, hu-

mid, and shady forests of the Luquillo Mountains. This plant, which reaches only 1.5 inches (4 centimeters) in height, has reddish flowers and slender, sheathed stems that are terminated by a single leaf. The species has been reported from only three sites. Although this is an inconspicuous orchid, illegal collectors have apparently extirpated one colony. The two known remaining populations are believed to number about 140 individuals. All three sites are within the Caribbean National Forest (managed by the USFS), where collecting is not permitted, but these remote areas are difficult to monitor.

- *Cranichis ricartii*, a terrestrial orchid, grows in the moist serpentine scrub forests of Maricao National Forest in the mountains of western Puerto Rico. This species reaches up to 10.5 inches (27 cm) in height, with small basal leaves and an inflorescence bearing numerous tiny, green flowers. Plants have been reported from three locations but are not seen at every site every year. A total of only 30 plants have been observed. The forest habitat was damaged in 1989 by Hurricane Hugo.

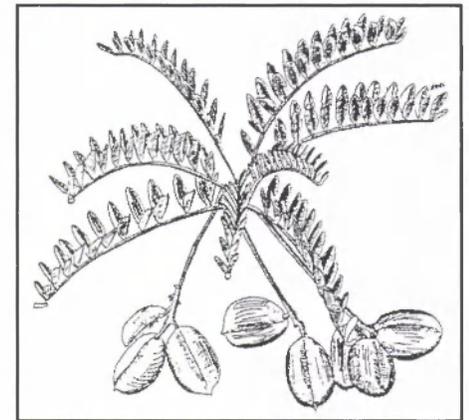
Although both species are found in protected areas, certain forest management practices (e.g., the establishment and maintenance of tree plantations) could affect their habitat. Their low numbers and restricted ranges make the loss of any individuals critical.

### Guthrie's Ground-plum (*Astragalus bibullatus*)

This perennial plant, a member of the pea family (Fabaceae), was named after Milo J. Guthrie of the Tennessee Department of Conservation, who rediscovered the species' type locality in 1980. It has stems that rise up to 6 inches (6 cm) high from a taproot, compound leaves composed of about 24 small leaflets, and an inflorescence with up to 16 purple flowers.

Guthrie's ground-plum is endemic to Tennessee's central basin. All sites

are associated with thin-bedded limestone outcrops that support cedar glade plant communities. The three currently known populations are in Rutherford County. A fourth Rutherford County population, and another in Davidson County, are believed to be extirpated. All three of the surviving populations are near the rapidly growing city of Murfreesboro. Residential, commercial, and industrial development in the area could threaten the species' remaining habitat. Competition by encroaching plants for light and the limited water and nutrients available in cedar glades is another problem at all three sites. Livestock grazing and off-road vehicles also are potential threats to the habitat.



Guthrie's ground-plum

### Walker's Manioc (*Manihot walkerae*)

This perennial herb, a member of the family Euphorbiaceae, is related to cassava (*Manihot esculenta*), a staple food crop in many parts of the tropics. Because Walker's manioc may contain genes that provide resistance to salt, drought, cold, or plant disease, and compounds that are useful for treating human diseases, it is of special interest to botanists, plant breeders, and drug companies. If Walker's manioc and cassava can be interbred, it may be possible to expand the range over which cassava can be grown, which would help feed more people. Unfortunately, however, Walker's manioc appears to be in danger of extinction.

(continued on next page)

## Listing Proposals

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*Manihot walkerae* is profusely branched, grows up to 1.6 feet (0.5 meters) tall, and has five-lobed alternate leaves and tubular-shaped white flowers. It is endemic to Tamaulipan brushland, a unique ecosystem found only in the Rio Grande Plains of southern Texas and northeastern Mexico. Other Endangered species found in this brushland community include the ocelot (*Felis pardalis*), jaguarundi (*Felis yagouaroundi*), ashy dogweed (*Thymophylla tephroleuca*), and Johnston's frankenia (*Frankenia johnstonii*).

Walker's manioc has been collected from only seven localities, in Starr and Hidalgo Counties, Texas, and the State of Tamaulipas, Mexico. The species is nearly extinct because of extensive habitat loss. Since the early 1900's, 95 percent of native Tamaulipan brushland in the United States has been cleared for cultivation, grazing, urban development, and recreation. Much of the land that remains in native vegetation is used for cattle grazing and is often severely overgrazed. The species was believed to be extirpated in this country until it was recently rediscovered near La Joya, Texas (see BULLETIN Vol. XV, No. 8). At present, this remains the only known population of the species in the wild. Plants are being cultivated at the University of Texas, Austin, and the San Antonio Botanical Gardens in Texas. Other natural populations may survive along the Rio Grande in suitable brush habitat, particularly on the lands of the Lower Rio Grande Valley and Santa Ana National Wildlife Refuges. Natural populations also may still exist in Mexico, but their presence has not been verified. Any existing Mexican populations are under severe threat because the region is heavily grazed and cultivated.

Because of this species' limited distribution and its vulnerability to human threats, the Service has proposed

that Walker's manioc be listed as Endangered (ER. 10/01/90).

### Penland Alpine Fen Mustard (*Eutrema penlandii*)



photo by Susan S. Martin

*Penland alpine fen mustard*

The Penland alpine fen mustard is the only representative of this primarily Asiatic genus in the conterminous 48 States. A small, herbaceous perennial in the family Brassicaceae, this plant grows up to 7.0 inches (17.8 centimeters) tall, has shiny green, heart-shaped basal leaves on stems, and bears clusters of small, white flowers. The taxon is closely related to *Eutrema edwardsii*, which occurs throughout the Arctic but is separated from *E. penlandii* by more than 1,000 miles (1,600 kilometers).

As its name implies, the Penland alpine fen mustard only grows at elevations above 12,500 feet (3,810 meters) on small, moss-covered, peat fens (wetland) over calcareous bedrock with constantly flowing water. The species is known from a 25-mile (40-km) stretch of the Continental Divide in the Mosquito Range of central Colorado. Its habitat contains persistent snowfields, which are necessary to maintain the water flows feeding the high-altitude fens. There are an estimated 5,200 plants distributed in 8 small populations over a total of 62 acres (25 hectares).

Different theories have been offered

to explain why the Penland alpine fen mustard is separated by such long distances from its nearest relatives. One theory is that the plant migrated south from the Arctic in front of advancing ice sheets during the Pleistocene epoch, and was left stranded in small pockets of alpine habitat when the ice sheets retreated. Another is that the plant is a relic of a more widespread northern hemisphere interior flora present in the Tertiary period, over 5 million years ago, which moved northward into the Arctic with the retreating ice sheets.

Most of the remaining populations are on Federal land managed by the U.S. Forest Service and Bureau of Land Management. The Forest Service has proposed the Hooser Ridge site, which is the type locality and accounts for about half the species' total population, as a Research Natural Area. Nearly all the other populations, however, are threatened by recreational and mining activities. Ditches and ruts, formed by off-road vehicles and mining activity, can dry up or alter the water flows that maintain the Penland alpine fen mustard's fragile habitat. Drainage from mine tailings also can acidify the fens, resulting in a loss of plants. Ditching and acid mine drainage are believed responsible for the loss of two small subpopulations of the species, which have not been seen since 1980. Because of the limited range of this species and the vulnerability of its fragile wetland habitat, the Fish and Wildlife Service has proposed that the Penland alpine fen mustard be listed as Threatened (FR. 10/15/90).

\* \* \*

### Available Conservation Measures

Among the conservation benefits authorized for Threatened and Endangered plants and animals under the Endangered Species Act are: protection from adverse effects of Federal activities; restrictions on take and traf-

(continued on page 12)

## Listing Proposal

(continued from page 11)

ficking; the requirement for the Service to develop and carry out recovery plans; the authorization to seek land purchases or exchanges for important habitat; and Federal aid to State and Commonwealth conservation departments that have approved cooperative agreements with the Service. Listing also lends greater recognition to a species' precarious status, which encourages other conservation efforts by State and local agencies, independent organizations, and concerned individuals.

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

Additional protection is authorized by Section 9 of the Act, which makes it illegal to take, possess, transport, or engage in interstate or international trafficking in listed animals except by permit for certain conservation purposes. For plants, the rules regarding "take" are different. It is unlawful to collect or maliciously damage any Endangered plant on lands under Federal jurisdiction. Removing or damaging listed plants on State and private lands in knowing violation of State law or in the course of violating a State criminal trespass law also is illegal under the Act. In addition, some States have more restrictive laws of their own specifically against the take of State or federally listed plants and animals.

## Spotted Owl Recovery

(continued from page 4)

vice, Bureau of Land Management, and U.S. Forest Service. Nominations are expected soon.

The intent is to establish a team that has the ability and time to handle this complex and controversial resource issue. Nominations have been requested for individuals that have established experience and credentials in such areas as wildlife and population ecology, forest ecology, and forestry. Team membership will be important to the success of this effort. The team is also expected to consider related resource issues and other listing candidates with the intent of investigating an ecosystem approach to resolving future problems in Northwest forests. It is expected that the initial phase of the recovery planning process will require a full-time commitment of 6 to 9 months.

The Endangered Species Act makes the Secretary responsible for develop-

ing and implementing plans for the recovery of Endangered and Threatened species. In carrying out this duty for the northern spotted owl, Secretary Lujan said that a number of factors will be taken into account, including potential community and regional socioeconomic impacts; fiscal effects at the local, State, and Federal levels; compatibility with other legal mandates; concerns related to other Endangered, Threatened, and potentially vulnerable species; and broader ecological considerations.

At this point, the Secretary estimates that a draft recovery plan will be completed and issued for public comment by December 31, 1991, and that a final version will be available for approval and implementation by June 30, 1992. These dates, however, are subject to change once the assembled team fully determines the scope of work needed to accomplish its assignment.

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## Regional News

(continued from page 2)

highest number of rails recorded at this site since 1975, when formal counts began.

\* \* \*

Of the 193 bald eagle (*Haliaeetus leucocephalus*) breeding territories surveyed by the Service in Oregon in 1990, 175 were occupied. The eagles had an average of 0.91 young per site, higher than the 5-year average of 0.87. The bald eagle recovery goal for Oregon is 206 occupied breeding territories with a 5-year average of 1.0 young per territory.

\* \* \*

The Desert Tortoise Recovery Team held its first meeting October 16 and 17 in Ventura, California. Team members got acquainted and discussed team objectives and recovery timeframes. Dr. Peter Brussard, from the University of Nevada-Reno, is the team leader. People wishing to contact the team should contact Ms. Judy Hohman, the team secretary and Ser-

vice representative, at the Service's Ventura Field Station, 2291-A Portola Road, Ventura, California 93003 (telephone: 805/644-1766; FTS 983-6040).

\* \* \*

The Service is continuing to work with the Army Corps of Engineers' Regulatory Branch to stop unauthorized activities in wetlands occupied by the Endangered least Bell's vireo (*Vireo bellii pusillus*) in the Prado Basin of southern California. The installation of a pipeline in willow woodland along Chino Creek this September, in violation of the terms of the utility's permit, destroyed at least 2 to 3 acres (0.8 to 1.2 hectares) of wetland vegetation and at least one nesting locale used by a pair of vireos during the 1990 breeding season. Unfortunately, this is the sixth incident in the past 5 years involving the destruction of occupied least Bell's vireo habitat within the Prado Basin.

\* \* \*

(continued on page 15)

# Awareness Grows on the Problems of Trading Live Birds and Other Live Wildlife

Susan S. Lieberman  
Office of Management Authority  
Washington, D.C.

Although few Americans are aware of it, millions of live wild birds, reptiles, and mammals are imported into the United States every year for commercial purposes.<sup>1</sup> The U.S. imports more live wildlife than any other country. Approximately 700,000 wild birds, 25 million aquarium fish, 1.2 million live reptiles, and 15,000 primates are imported into this country every year. Taking these animals from the wild threatens the survival of some of these species, and the conditions under which they are shipped are all too often cruel and inhumane, with thousands of animals dying in transit.

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) regulates the international trade of species that are or may be threatened with extinction. Species listed in Appendix I of the treaty, which are threatened with extinction, cannot be traded for primarily commercial purposes. Species listed in Appendix II, which could become threatened with extinction if their trade is not brought under control, may be traded for commercial purposes only if export permits are obtained stating that trade will not be detrimental to the species in the wild.

The CITES Parties (member countries) have been addressing the problems of the shipment of live animals since the inception of the treaty. The welfare of individual animals in transit is specifically covered in the CITES text, which requires Parties to ensure that "any living specimen will be so prepared and shipped as to minimize the risk of injury, damage to health or cruel treatment." At the last CITES meeting, in October of 1989, the Parties again recognized the problem of transport-induced deaths, and recommended that more be done to collect

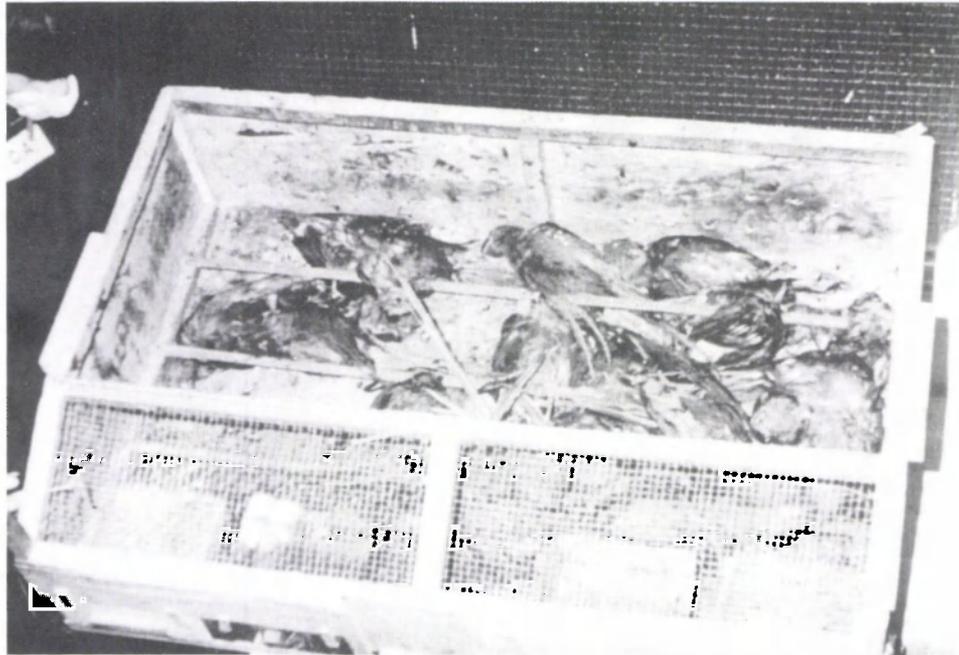


photo by Tim Inskipp

*When birds and other animals are shipped in improper or inhumane conditions, disease or even death is often the result. These Indian ring-necked parakeets (*Psittacula krameri*) were found dead upon arrival.*

mortality data and improve transport conditions. (For more information on the October 1989 CITES Conference, see BULLETIN Vol. XV, No. 5.)

## Wild Bird Trade

From 1986 to 1988, more than 1.9 million wild birds were legally imported into the United States, of which approximately 850,000 were parrots (psittacines) and other species listed in the CITES appendices. In 1988, the most recent year for which there are complete statistics, four countries—Argentina, Senegal, Tanzania, and Indonesia, in order of export volumes—each legally exported more than 30,000 wild birds to the United States. An additional tens of thousands of birds (particularly parrots) were smuggled into this country, but it is difficult to accurately quantify or even estimate this illegal trade. Psittacine species dominated the legal

trade: 33 species accounted for more than 5,000 birds apiece, and 10 of these species accounted for more than 25,000 birds apiece. Virtually all of the wild birds imported into this country are for the commercial pet trade.

The Fish and Wildlife Service is very concerned that high levels of trade in psittacines may be detrimental to the survival of some species in the wild, in spite of apparently valid export documents that state otherwise. Many exporting countries are unable to undertake the critical scientific studies necessary to address the effects of trade on wild populations and to appropriately manage commercially valuable species. At the urging of the Service, the CITES Parties now recognize "significant trade species"—those species traded in large quantities about which there is insufficient biological information available and for

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## Bird Trade Problems

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which trade may indeed be detrimental. The Service is funding several studies dealing with significant trade species, including a project on Indonesian psittacines, and will be discussing issues pertaining to significant trade species at a meeting of the CITES Animals Committee. The International Union for the Conservation of Nature and Natural Resources (IUCN) has also made a commitment to study these significant trade species.

Mortality and morbidity in the transport of wild birds continues to be a problem. For example, from 1986 to 1988, 16.4 percent of the birds shipped (more than 324,000 birds) were either dead on arrival in this country or dead within the required 30-day quarantine period (not all of which may have been transport-related). Much of the death and illness during transport is due to improper or inhumane preparation and shipping of the birds.

## CITES Transport Working Group

Both governmental and non-governmental organizations are concerned with the conservation problems associated with the transport of live animals. Two groups have been formed to address these problems: the CITES Transport Working Group and the non-governmental Cooperative Working Group on Bird Trade.

The CITES Working Group was created to improve international transport and shipment guidelines and regulations, reduce transport-associated mortalities, and help the CITES Parties comply with existing requirements and resolutions. In September 1990, the Service attended the first international meeting of the CITES Working Group in London. Other attendees included representatives of five countries, the CITES Secretariat in Switzerland, the European Com-

munity Commission, and eight non-governmental organizations. The meeting focused attention on the pet trade in live wild birds. The CITES Working Group agreed that the enforcement of existing trade regulations and resolutions, and the training of people involved in the export of live wildlife (particularly in Africa and Latin America), are high priorities. It also agreed to consider adopting remedial measures for those species particularly sensitive to injury and death during transport.

## Cooperative Working Group on Bird Trade

In 1988, the World Wildlife Fund began sponsoring a Cooperative Working Group on Bird Trade. Representatives of various non-governmental organizations, including conservation, zoological, veterinary, ornithological, humane, avicultural, and trade groups, have participated in its discussions. After studying the international trade of wild birds for pets, the non-governmental Cooperative Working Group concluded this year that the pet trade is contributing to the decline of some species in the wild, and that mortality remains unacceptably high for many species. The group recommended that the United States encourage captive breeding of birds for the pet trade and phase out the trade of wild birds within 5 years. The Cooperative Working Group is now trying to translate its recommendations into legislation.

The Service, along with the Department of Agriculture's Animal and Plant Health Inspection Service (APHIS), recently accepted the World Wildlife Fund's invitation to attend the cooperative group meetings as an observer. The Service is still studying the group's findings and has not yet taken a position on the recommendations. However, we look forward to working with this organization with the goal of ensuring that the trade of

wild birds does not harm populations in the wild.

## Humane Transport Regulations

In addition to the requirements in the CITES treaty and recommendations in the CITES resolutions, the United States has its own strict regulations concerning the transport of live animals. The Lacey Act Amendments of 1981 (PL. 87-79, 95 Stat. 1073) required the Secretary of the Interior to prescribe requirements for the humane and healthful transport of wild animals to the United States. A final rule for the transport of wild mammals and birds, published in the November 10, 1987, *Federal Register*, took effect February 8, 1988. On October 15, 1990, the Service proposed amendments to these regulations to further promote the humane transport of live animals into this country, clarify the regulations, and strengthen enforcement efforts. The Service still is analyzing public comments on these proposals. This is the first of several regulatory changes anticipated by the Service in order to reduce transport-associated deaths.

Working together with the CITES Parties, the CITES Transport Working Group, the Cooperative Working Group on Bird Trade, and other interested organizations, the Service is acting to ensure the humane transport of live animals into the United States and throughout the world. We are also committed to controlling the trade of live animals that are or may be threatened with extinction and to reducing the transport-induced mortalities of all animals that are brought into this country. In these ways, we hope to ensure the conservation of wildlife populations in their native habitat.

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<sup>1</sup> Sources of data: *Fish and Wildlife Service (CITES Annual Report, Law Enforcement information, 3-177 forms, CITES permits), U.S. Department of Agriculture, WWF/TRAFFIC (U.S.), Animal Welfare Institute.*

## Regional News

(continued from page 12)

**Region 2** - The Yuma clapper rail (*Rallus longirostris yumanensis*) nests in dense cattail and reed stands in freshwater marshes, where it feeds primarily on crayfish. In the U.S., this Endangered bird is found primarily in early successional cattail marshes along the banks of the Colorado River and associated tributaries in Arizona and California.

For over 17 years, an annual spring calling count survey has been conducted during the rail's nesting and breeding season. This year, the Service, Bureau of Land Management, Bureau of Reclamation, Arizona Game and Fish Department, California Department of Fish and Game, and local National Audubon Society chapters participated in the calling count survey along the Colorado River and in the other isolated areas where the rail is known to occur. The number of responses to taped calls was approximately twice the figure for the 3 previous years (673 compared to 272-350 in 1987-1989). The population may be increasing due to stabilizing habitat conditions. The increase also is attributed to additional areas being surveyed and more time being invested in the survey. The Service hopes the increase indicates that the Yuma clapper rail's status is improving.

\* \* \*

**Region 4** - The Alabama Department of Conservation and Natural Resources and the Louisiana Department of Wildlife and Fisheries recently signed Cooperative Agreements with the Service under Section 6 of the Endangered Species Act. Their respective agreements cover 56 federally listed animal species in Alabama and 26 animal species in Louisiana. Federal matching funds can now be provided to the two States for their efforts to monitor, study, and recover these species. With the signing of these cooperative agreements, every State in the Southeast Region now has

a Section 6 agreement with the Service covering animals, plants, or both.

\* \* \*

**Region 5** - The Service's New York Field Office is working with the Town of Brookhaven, New York, to protect sandplain gerardia (*Agalinis acuta*) on a site owned by the town. Although this site has been disturbed by activities related to a pipeline project, several of the Endangered plants are still growing in the area. A highway that would cross the area has been proposed by the town, but the town has agreed to sign a cooperative agreement that protects the plants and provides for The Nature Conservancy to manage the site.

\* \* \*

The number of nesting bald eagles continues to increase in Region 5. This year, 380 pairs nested in the region, up from 232 pairs in 1986, and they produced 452 young.

\* \* \*

Last spring, the death of hundreds of songbirds and waterfowl in the Delmarva Peninsula area was attributed to the use of granular carbofuran, a pesticide primarily used to control insects in corn fields. During the past several years, a number of bald eagles in the Chesapeake Bay area have been known to have been poisoned by this pesticide. The Service has urged the Virginia Pesticide Control Board to prohibit the use of granular carbofuran within the State, and has repeatedly urged the Environmental Protection Agency to cancel the registration of this pesticide.

\* \* \*

Based on the opposition of the Service, State agencies, and conservation groups, Charles City County, Virginia, has withdrawn its request for a permit from the Army Corps of Engineers to build a public boat ramp at Wilcox Wharf on the James River. This boat ramp would have been in the middle of the largest summer bald eagle concentration area in the eastern United States. Although the county

has withdrawn its application, a private citizen recently announced plans for another public boat ramp on the south side of the James River, immediately adjacent to the area that the Service is planning to buy from The Nature Conservancy as a new national wildlife refuge. This proposed boat ramp also could affect the eagle roosting area.

\* \* \*

**Region 8** - In late September, the Patuxent Wildlife Research Center's Minnesota Research Group conducted a field demonstration of a remote-controlled wolf capture collar for a delegation of scientists from the Soviet Union. The gray wolf (*Canis lupus*) had been wearing the collar in the wild for one month. After the wolf was successfully captured, the radio-triggered tranquilizer syringes in the collar were refilled and the wolf was released.

\* \* \*

**Region 9** - In fiscal year 1990, the Fish and Wildlife Service obligated \$350,000 from the African Elephant Conservation Fund to seven projects. The involved nations and non-governmental conservation organizations are also contributing to the funding of these African elephant (*Loxodonta africana*) conservation projects, bringing the total to over \$800,000. The grants are being used for anti-poaching activities in Burkina Faso, the Central African Republic, Gabon, Tanzania, and Zambia; overall planning and coordination work by the international African Elephant Conservation Coordinating Group; and establishing a TRAFFIC/World Wildlife Fund office for east and southern Africa.

\* \* \*

The Secretariat of the Convention on International Trade of Endangered Species of Wild Fauna and Flora (CITES) has informed the 108 Parties to the treaty that China has withdrawn its reservation on the African elephant, effective January 11, 1991.

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## Regional News

(continued from page 15)

After that date, China will comply with the decision of the CITES Parties to place the African elephant on Appendix I, which prohibits commercial trade of species threatened with extinction. The United Kingdom withdrew its reservation for Hong Kong on July 18, 1990. Only five southern African countries still have reservations on the African elephant. In addition, Singapore withdrew its reservations on two Appendix I species, the saltwater crocodile (*Crocodylus porosus*) and the New Guinea crocodile (*Crocodylus novaeguineae*).

## BOX SCORE LISTINGS AND RECOVERY PLANS

Category	ENDANGERED		THREATENED		LISTED SPECIES TOTAL	SPECIES WITH PLANS
	U.S.	Foreign Only	U.S.	Foreign Only		
Mammals	53	248	8	22	331	29
Birds	74	153	11	0	238	69
Reptiles	16	58	17	14	105	25
Amphibians	6	8	5	0	19	6
Fishes	54	11	33	0	98	44
Snails	3	1	6	0	10	7
Clams	37	2	2	0	41	29
Crustaceans	8	0	2	0	10	5
Insects	11	1	9	0	21	12
Arachnids	3	0	0	0	3	0
Plants	179	1	60	2	242	120
<b>TOTAL</b>	<b>444</b>	<b>483</b>	<b>153</b>	<b>38</b>	<b>1118*</b>	<b>351**</b>
Total U.S. Endangered	444	(265 animals, 179 plants)				
Total U.S. Threatened	153	(93 animals, 60 plants)				
Total U.S. Listed	597	(358 animals, 239 plants)				

\* Separate populations of a species that are listed both as Endangered and Threatened are tallied twice. Those species are the leopard, gray wolf, grizzly bear, bald eagle, piping plover, roseate tern, Nile crocodile, green sea turtle, and olive ridley sea turtle. For the purposes of the Endangered Species Act, the term "species" can mean a species, subspecies, or distinct vertebrate population. Several entries also represent entire genera or even families.

\*\* There are 276 approved recovery plans. Some recovery plans cover more than one species, and a few species have separate plans covering different parts of their ranges. Recovery plans are drawn up only for listed species that occur in the United States.

Number of Cooperative Agreements signed with States and Territories: 53 fish & wildlife  
39 plants

November 30, 1990

November 1990

Vol. XV No. 11

# ENDANGERED SPECIES

## Technical Bulletin

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