

ENDANGERED SPECIES

Technical Bulletin

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

Endangered Squirrels Released for Experimental Population

Seven Delmarva fox squirrels (*Sciurus niger cinereus*) were taken from Maryland and released September 21 into the Assawoman Wildlife Area, a State-managed area in Sussex County, Delaware, as the beginning of an effort to establish an "experimental population" of this Endangered subspecies. They were the first listed animals released under new Federal regulations that encourage the experimental population approach as a recovery tool (F.R. 8/27/84). The reintroduction of this Endangered squirrel into part of its historical range was made possible by the active participation of the Delaware Department of Natural Resources and Environmental Control, the Maryland Department of Natural Resources, and the U.S. Fish and Wildlife Service.

All seven adult squirrels—four females, three males—were taken from existing populations in Maryland the week before their release and held to be marked and radio-collared. Current plans call for the release of about six additional squirrels (four females, two males).
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California Butterfly Proposed as Endangered

The bay checkerspot butterfly (*Euphydryas editha bayensis*), historically known from the San Francisco Peninsula and its outer Coast Range, has suffered a tremendous reduction in numbers and range. Of the 16 colonies once known, only five remain and these now face the possibility of extinction. In an effort to help conserve the surviving populations, the Service has proposed to list the bay checkerspot butterfly as Endangered (F.R. 9/11/84).

The bay checkerspot butterfly is restricted to grassland areas on shallow serpentine soils that support its larval foodplants. Since 1960, it has been the subject of intensive research by Dr. Paul R. Ehrlich and his associates at Stanford University. They documented the presence of 16 colonies of the

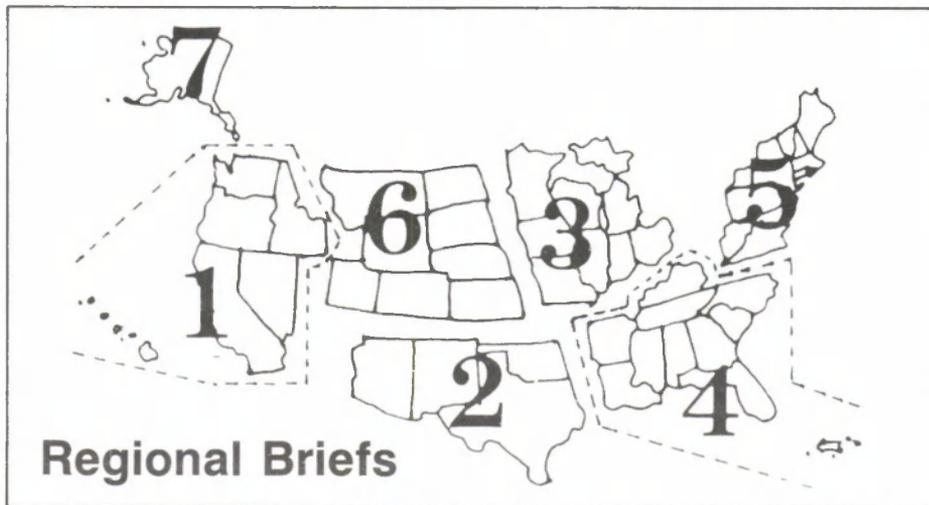
checkerspot, 11 of which have been extirpated by freeway construction, the introduction of exotic plants, overgrazing by livestock, and drought. Four of the five remaining populations, referred to as the San Bruno Mountain, Woodside, Jasper Ridge, and Edgewood colonies, are located in San Mateo County. The largest and most secure colony, Morgan Hill, occurs in Santa Clara County.

The Woodside colony is close to extirpation, if not already gone. Its numbers dropped from approximately 10,000 in 1979 to fewer than 100 in 1982 after the construction of a condominium complex removed all but one acre of the butterfly's habitat. In 1983, not a single butterfly could be found in the area. The San Bruno Mountain colony, another of the remaining popula-

tions of the bay checkerspot, is susceptible to large fluctuations that occasionally bring it to the brink of extinction. The Edgewood, Jasper Ridge, and Morgan Hill colonies are the only three that still appear to be viable at this time. However, the Edgewood colony habitat is threatened by the construction of a golf course and other recreational facilities, and the Jasper Ridge colony is small enough to be prone to large fluctuations in population size. Although the Morgan Hill colony is relatively the most secure, overgrazing and a proposed sanitary landfill pose a threat.

Habitat damage resulting from human activities can reduce the size of a butterfly colony to a level at which natural climatic changes can lead to extinction.

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tory Study, will be incorporated into the soon-to-be-completed annual report.

The rehabilitation of one of three ponds containing Pahrump killifish (*Empetrichthys latos*) at Corn Creek Springs, Desert National Game Range, Nevada, has begun. Personnel from the FWS Great Basin Complex and the Moapa National Wildlife Refuge (NWR); Nevada Department of Wildlife; and the University of Nevada, Las Vegas, successfully moved 4,500 killifish into a holding area until vegetation is removed to deepen the pond.

Results of a Federal/State inter-agency survey of bald eagle (*Haliaeetus leucocephalus*) nesting in Idaho during 1984 have been published. See page 7 of the BULLETIN for details.

Region 2—A radio-collared, female ocelot (*Felis pardalis*) was struck and killed by a vehicle on September 1, 1984, in south Texas. The dead animal was brought to the Laguna Atascosa NWR where it will be preserved as a scientific specimen. The citizen turning in the ocelot was aware of the study being conducted by the Service through an article appearing in the Texas Parks and Wildlife Department's magazine. A finding of this study indicates that motor vehicles may pose a significant hazard to ocelot survival. Three of four ocelot mortalities known to have occurred during the study have been road kills. These animals were discovered because of the radio transmitters they were wearing, which suggests that mortalities in non-radioed ocelots may occur more frequently than reported.

As part of the ongoing razorback sucker (*Xyrauchen texanus*) recovery effort, 10,000 fingerling reared at Dexter National Fish Hatchery were released into the Gila River in Arizona on September 20, 1984, and then monitored to determine their dispersal. During most of the first day, the 7 to 9-inch fish showed little movement, but they began dispersing downstream that evening. Within 48 hours, some fish had moved at least 9 kilometers downstream, while others remained close to the stocking site. In a interesting note, every flathead catfish (*Pylodictis olivaris*) captured within the area contained up to four of the released fingerling suckers. Razorback sucker stocking in Arizona will continue for the next 5 years. Monitoring of the new populations will accelerate through the efforts of the Arizona Department of Game and Fish.

Drs. Clark Hubbs (University of Texas, Austin) and Gerry Hoddenbach (National Park Service) may have lo-

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

Region 1—FWS Great Basin Complex personnel recently completed a field survey in southern Nevada to de-

termine the abundance and distribution of the Moapa dace (*Moapa coriacea*). Although they have not completed their analysis, preliminary indications are that the Moapa dace population may exceed that previously projected. These data, along with others gathered during the first year of the Moapa Dace Life His-

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Seeking a Home for the Red Wolf

by
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Recent efforts to locate a suitable reintroduction site for the Endangered and perhaps extinct-in-the-wild red wolf (*Canis rufus*) have been frustrating. This species, which once ranged over the entire southeastern United States, may have been eliminated from its original range by the late 1960s or early 1970s. Since then, it has existed mainly as a captive animal while efforts have been underway to reestablish it somewhere in the wild. Today, only 50 animals remain from a population that at one time probably numbered in the hundreds of thousands.

Major hurdles faced by this species include the very name "wolf," which automatically conjures up fear, prejudice, and folk tales; opposition from farmers who raise livestock and fear depredations from another "varmint"; potential interbreeding with the more adaptable coyote (*Canis latrans*); and the plain fact that few areas of suitable size are available today into which reintroductions can reasonably be attempted. Not too surprisingly, some hunters fear the red wolf could decimate deer (*Odocoileus virginianus*) and wild turkey (*Meleagris gallopavo*) populations.

Based on the best available knowledge of the species, few or possibly none of the above mentioned fears are realistic. Red wolves could, given the right conditions, prey on calves that are unattended. They will almost certainly



Photo by Curtis Carley

Today, the red wolf probably exists only in captive breeding facilities.

take an occasional deer, especially a crippled or diseased animal. By and large, however, these animals are secretive, shy creatures that subsist mostly on small animals, fruits, and berries, and that usually avoid contact with man.

Several large federally owned areas in the southeast have recently been investigated as possible transplant sites. One new area in particular remains to be fully examined and evaluated. If it, too, falls from consideration, the red wolf may indeed have run its last race.

Rare Spined Mussel Proposed for Protection



Tar River spiny mussel

Photo courtesy of Museum of Comparative Zoology, Harvard University

The Tar River spiny mussel (*Elliptio (Canthyria) steinstansana*), a freshwater clam that survives in a short stretch of the Tar River in Edgecombe County, North Carolina, has been proposed by the Service for listing as an Endangered species (F.R. 9/17/84). Biologists estimate that only 100-500 of the mussels remain. With its restricted

range and low numbers, the species is vulnerable to extinction from habitat modification or degradation.

Aside from the Tar River spiny mussel, only two other freshwater spined mussels are known: a small-shelled, short-spined species, *Fusconaia collina*, found only in Virginia's James River, and a large-shelled, long-spined species, *Elliptio (Canthyria) spinosa*, collected only from the Altamaha River in Georgia. The Tar River species is intermediate between these two in shell size (length about 60 millimeters) and spine length. It has been suggested that the mussel's spines help it to maintain an upright position as it moves through soft sand and mud substrates.

The Tar River spiny mussel's known distribution has declined significantly; historical records show that it once occurred both upstream and downstream of its current range. A recent Service-funded survey of the Tar, Neuse, and Roanoke Rivers in North Carolina found that the species is now restricted to about a 12-mile stretch of

the Tar River. Because it has such a limited range and low numbers, the mussel is extremely vulnerable. A single catastrophic event, such as a toxic chemical spill, could cause rapid extinction. Another potential threat could result from the proposed installation of a hydroelectric facility at an existing upstream dam near Rocky Mount, North Carolina. A feasibility study is evaluating the possible restriction of river flow on a daily basis to store water for generating electricity at times of peak power demands. If the hydroelectric project is approved and installed, fluctuating downstream flows could strand mussels on sand bars, and substantially reduced flows could degrade water quality by concentrating agricultural runoff (pesticides and excess nutrients).

If the proposed rule to list the Tar River spiny mussel as an Endangered species is made final, it will receive the protection authorized under the Endangered Species Act. Among the benefits

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Squirrels

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males) in spring 1985, with a third release in the fall of that year for a total reintroduction of about 19 animals.

Continual monitoring of the reintroduced squirrels will be carried out by the Delaware Department of Natural Resources and Environmental Control. The released squirrels will be checked periodically to determine their movement, reproductive success, and general health. Some of the funds for monitoring and managing the Delaware population are coming from the State's new tax check-off program, which allows taxpayers to donate part of their State income tax refunds for conservation of endangered and non-game wildlife. Since Delaware has a cooperative agreement with the Service, it also receives some Federal aid under Section 6 of the Endangered Species Act.

Delmarva fox squirrels once occurred in scattered areas throughout southeastern Pennsylvania, south-central New Jersey, the Virginia portion of the Delmarva Peninsula, eastern Maryland, and Delaware. Its habitat consisted of savannah or park-like areas, forests bordering streams and rivers, and small, open woodlots with little understorey. As land use patterns changed and the habitat was converted to agricultural production or invaded by dense undergrowth, the squirrel disappeared from most of its historical range. Today, it is Endangered, surviving only in the Eastern Shore of Maryland and in Virginia at Chincoteague National Wildlife Refuge (where it was reintroduced in the 1970s).

Efforts to restore the Delmarva fox squirrel in former habitat in Maryland over the past 10 years have been successful, and techniques are continually being refined. Monitoring of six Maryland release sites has shown squirrel reproduction in five of them within a year of release. The "donor" populations for the Delaware reintroduction are healthy and are naturally expanding their current range.

Management of the Population

The new Delaware population of the Delmarva fox squirrel has been designated as a "non-essential experimental population" (F.R. 9/13/84), which means that, although the release is expected to aid in the squirrel's recovery, a loss of the reintroduced animals would not jeopardize the subspecies'

overall survival. Under their designation as a non-essential experimental population, the Delaware squirrels will be treated for Section 9 purposes as if they were listed as Threatened. This means that all protective prohibitions of 50 CFR 17.31 will continue to apply, with the exception that the September 13 special rule allows for all squirrels that are accidentally taken to fall under the jurisdiction of Delaware State law. Prosecution of violations of State law, therefore, will rest with Delaware.

For habitat conservation purposes, the experimental population will be treated as a species that is *proposed* for listing. Instead of having to "consult" with the Service on Federal actions that may affect the population, Federal agencies will only have to "confer" (an informal, non-binding process) under Section 7(a)(4).



Photo by Peter G. P.

Delaware and Maryland biologists fitting Delmarva fox squirrel with radio-collar

Regional Briefs

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cated several individuals of a "new" population of Big Bend gambusia (*Gambusia gaigei*) at Big Bend National Park. Originally described from the now dry Boquillas Spring, the species was maintained at the park in an artificial refuge (Spring 4) by the National Park Service until the fish virtually disappeared 27 years ago. Dr. Hubbs salvaged three fish from Spring 4 and the NPS created Spring 1 as a new refuge for the species. The Big Bend gambusia went through a second genetic "bottleneck" in 1975 when water temperatures in Spring 1 fell below normally lethal limits and only 15 individuals survived. Thus, the present stock of Big Bend gambusia is believed to have

a drastically reduced gene pool, and the rediscovery of a few fish still inhabiting Spring 4 may supplement the reduced genetic diversity of the species.

The Big Bend Gambusia Recovery Plan was signed by the Regional Director on September 19, 1984.

Beginning in October, Dr. James Lewis will be directing whooping crane (*Grus americana*) recovery actions from the Region 2 Endangered Species Office as the Service's Whooping Crane Coordinator. Dr. Lewis's past experience with whooping cranes, as well as his ability to work with the numerous Federal, State, international, and private organizations involved with the cranes, will greatly expand and enhance the whooping crane recovery effort.

Region 2 will also welcome the botanical expertise of Dr. Charles McDonald

to the regional Endangered Species Office. Dr. McDonald will work primarily with Oklahoma and Texas plants.

A whooping crane coordination meeting was held recently in Atlanta, Georgia. Discussion centered around the possible selection of an additional whooping crane release site. Potential sites include peninsular Florida, Seney NWR (Michigan), and Okefenokee NWR (Georgia).

Region 3—The annual Endangered Species Coordinators meeting was held in Iowa on September 17-19. All the Region 3 States participated in this meeting, which is held annually to give the State specialists an opportunity to review their accomplishments in the endangered species program and to plan strategies for new activities.

A public hearing on the proposal to list the interior least tern (*Sterna antillarum athalassos*) as an Endangered species was held in Omaha, Nebraska, on September 11, 1984. Approximately 70 people attended the hearing, and 12 of them testified. Most of the comments received were in favor of listing the least tern.

Region 4—The first hacking of peregrine falcons (*Falco peregrinus*) in Tennessee was carried out in August when four young birds were released. These birds, provided by Cornell University, were transported, acclimated, and released at a site on Greenbrier Pinnacle in the Great Smoky Mountains National Park. The release was a cooperative effort on the part of the Tennessee Wildlife Resources Agency, the National Park Service, the U.S. Fish and Wildlife Service, and the Tennessee Valley Authority.

A pair of bald eagles nested and successfully hatched a pair of eaglets this summer in Hyde County, North Carolina. This was the first verifiable nesting in North Carolina of this species since 1970. The nest was situated close to the Mattamuskeet National Wildlife Refuge on private land.

Artificial foraging ponds for Endangered wood storks (*Mycteria americana*) may become a reality in South Carolina. The U.S. Department of Energy's Savannah River Plant has agreed to construct, maintain, and monitor 31 acres of ponds for the benefit of a colony of storks near Millen, Georgia, that would be adversely impacted by the restart of the facility's "L" Reactor. Such conservation work would provide invaluable information on this species, and perhaps indicate that artificial foraging ponds are sound management options.

The Alabama legislature passed a bill on May 21, 1984, prohibiting the taking of flattened musk turtles (*Sternotherus depressus*), a Category 1 candidate species, in Alabama. This law could be a deterrent to overcollecting if it is implemented and enforced. Increased collecting pressure on the flattened musk turtle for commercial purposes was probably generated when the species appeared on the vertebrate notice of review. The notice may have increased the demand for the turtle by signifying its rarity. The State of Alabama has certainly taken a step in the right direction, and a listing of the species could bolster this effort.

The Nature Conservancy has purchased the entrance and surface area

of Cave Springs Cave in Arkansas. Cave Springs Cave contains the largest known population of the Ozark cavefish (*Amblyopsis rosae*), which has been proposed for listing as Threatened, and harbors a summer maternity colony of Endangered gray bats (*Myotis grisescens*). The bat colony consists of about 7,000 bats, including young. A census of Ozark cavefish found 100 individuals this year, and resulted in an estimate that this cave supports 300 cavefish—approximately 60 percent of the species' entire known population. The cave will be maintained by the Arkansas Natural Heritage Commission.

A Regional Brief item in BULLETIN Vol. IX No. 8 incorrectly identified the Cahaba shiner as *Notropis simus*. A scientific description of the Cahaba shiner has not yet been published, and this fish should be referred to as *Notropis* sp.

Region 5—During September 10–13, biologists from The Nature Conservancy, the Tennessee Valley Authority, the Virginia Cooperative Fisheries Research Unit, and the Fish and Wildlife Service participated in a survey of Pendleton Island. The island, located in the Clinch River in southwestern Virginia and recently acquired by The Nature Conservancy, is in the midst of one of the most diverse mussel populations in North America. During the 3-day survey, 36 species of mussels and 44 species of fish were identified.

The Region 5 endangered species staff and the Annapolis, Maryland, Field Office met with staff personnel from the Maryland Department of Natural Resources and the Soil Conservation Service to discuss the Upper Chester River Watershed Channelization Project and to conduct field investigations for Canby's dropwort (*Oxypolis canbyi*), a candidate plant that should be proposed for listing within the near future. The project could affect the only known Maryland population of Canby's dropwort. Federal and State personnel have joined in a cooperative effort to minimize any adverse impacts to the plants.

Region 6—The Rocky Mountain Program of The Peregrine Fund, Inc., completed its move from Fort Collins, Colorado, to Boise, Idaho, on September 13, 1984. The new address is World Center for Birds of Prey, Rocky Mountain Peregrine Program, 5666 West Flying Hawk Lane, Boise, Idaho 83709, telephone 208/362-3716.

Region 7—On August 29, 1984, the National Audubon Society submitted a

petition to list the McKay's bunting (*Plectrophenax hyperboreus*) and the St. Matthew vole (*Microtus abbreviatus fisheri*) as Endangered species. Both species are endemic to St. Matthew Island, an 80,000-acre wilderness area within the Alaska Maritime National Wildlife Refuge. The National Audubon Society and other environmental groups are in litigation regarding a 4,000-acre land exchange between the Department of the Interior and the Cook Inlet Region, Incorporated. Region 7 endangered species staffers are preparing a response to the petition.

Final results are available from this summer's extensive peregrine falcon (*Falco peregrinus*) survey, in which 8 major Alaska rivers—totalling about 2,200 river miles—were travelled by endangered species biologists and our contractors. A total of 132 nesting pairs were observed, 94 American (*F. p. anatum*) and 38 Arctic (*F. p. tundrius*) peregrine falcons. Of the 250 young observed, 198 were banded. Once again, the Yukon River supported a higher density and greater number of nesting pairs than any other river. Of the 94 pairs of American peregrines found nesting in Alaska in 1984, 77 (82 percent) nested along the Yukon River or its tributaries. Similarly, north of the Brooks Range, the Colville River supported 30 of the 38 (79 percent) observed Arctic peregrine pairs. The outlook appears bright, as most Alaska rivers that historically supported peregrines have increasing populations. The one exception is the Tanana River, which formerly supported as many as 14 pairs but has had only 4 or 5 pairs for the last 5 years.

Butterfly

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A severe drought in 1976 and 1977, in association with grazing, caused the disappearance of four colonies of the checkerspot and greatly reduced the Jasper Ridge population. This drought also caused the extinction of some populations of another subspecies of *Euphydryas editha*. It seems likely that, due to the habitat degradation that has taken place, any future drought would be detrimental to most of the remaining colonies of the bay checkerspot butterfly.

Years ago, several small populations of the bay checkerspot butterfly apparently underwent natural extinction and subsequent recolonization from nearby populations. In order for this butterfly to maintain itself in nature, preservation of several colonies in close proximity to each other may be necessary so that recolonization can continue. However,

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Butterfly

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as habitat is lost and the number of colonies decreases, the distances among colonies becomes greater and the chances of recolonization decrease. This reason alone makes it imperative to protect the remaining colonies if the subspecies is to survive.

Effect of Listing if Approved

If this proposal is made final, the bay checkerspot butterfly will receive all of the protection authorized under the Endangered Species Act. Conservation measures provided to a species listed as Endangered include better recognition of its vulnerable status, development of recovery actions, possible Federal aid to State conservation programs, and prohibitions against certain practices. Taking, possessing, and interstate and international trafficking in this butterfly will be prohibited, except under permit, if it is listed. In addition, under Section 7 of the Act, Federal agencies are required to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the survival of any

listed species or adversely modify its Critical Habitat.

A designation of Critical Habitat is included as part of the listing proposal.

Critical Habitat designations do not constitute formal refuges or wilderness areas, nor do they prohibit actions of a purely private nature as long as the protected animals themselves are not harmed. Rather, Critical Habitat designations are used by planners in Federal agencies to help them comply with Section 7 of the Act.

Three activities involving Federal agencies are currently known that may have an impact on the checkerspot's habitat—the proposed golf course and recreational facilities at Edgewood Park, residential development of San Bruno Mountain, and the proposed sanitary landfill at Morgan Hill. The Service is notifying the National Park Service and the Environmental Protection Agency, which have jurisdiction over the land and water areas under consideration for this proposed action. Potential economic and other impacts of designating Critical Habitat will be evaluated and considered prior to a final decision.

Comments on the proposal to list the bay checkerspot butterfly as Endangered are invited, and should be sent to the Endangered Species Coordinator,

Region 1 (address on page 2) by November 13, 1984.

The area proposed includes approximately 1,620 acres in San Mateo County and 6,678 acres in Santa Clara County, California. This area does not include the entire historic habitat of the bay checkerspot butterfly, and modifications in the Critical Habitat designation may be proposed at a later date.

Reference Note

All Service notices, along with final and proposed rulemakings, are published in full detail in the *Federal Register*. The parenthetical references given in the BULLETIN—for example, (F.R. 8/20/84)—identify the date that the notice or rule-making action appeared in the *Federal Register*.

We Need Your Help

To make this *your* BULLETIN, as well as ours, we need your help. Please send the Editor any comments for improving the format, ideas for articles, photographs, and reports on current research and management activities.

Three Palau Birds, Now Secure, Proposed for Removal from Endangered List

Three species of forest birds native to Palau, an archipelago in the far western Pacific, have recovered on those islands that suffered habitat damage during World War II, and the Service has proposed that they be removed from Endangered Species Act protection (F.R. 9/19/84). These birds currently are distributed throughout their historical ranges, have stable populations at or near the carrying capacity of their habitats, and are not known to face any significant threats:

- **Palau fantail (*Rhipidura lepida*)** or, in the Palauan language, **melimdelebleteb**—a long-tailed, generally rufous-colored flycatcher about 15 centimeters in length. It is now common throughout the islands in most woody vegetation types, from second growth thickets to mature stands of native forest.
- **Palau ground-dove (*Gallicolumba canifrons*)** or **omekren-gukl**—a mostly terrestrial bird, about 22 cm in length, with an iridescent bronze-to-purplish sheen on its wings and back. Although this forest bird has never

been common, its low population density probably is a natural condition reflecting its need for a large territory.

- **Palau owl (*Pyroglaux (=Otus) podargina*)** or **chesuch**—a small (23 cm) owl, overall rufous brown in color. It resides in all forest types, including mangroves. The Palau owl became rare on the southern islands during World War II, and was thought to have declined for a time even after the war due to its predation on the introduced coconut rhinoceros beetle (*Oryctes rhinoceros*). (This insect, which can burrow through the thick hull of a coconut, apparently is swallowed whole by the owl and kills it by breaking through the bird's stomach wall.) Since the 1960s, however, the owl's numbers have rebounded and today the bird is abundant throughout the archipelago.

The birds do not seem to face any significant threats at this time. Forest bird habitat on the islands of southern Palau that were damaged by World War II has largely recovered. Currently, about 75 percent of Palau is forested.

Much of this forest habitat should remain intact in future years, particularly on the many small, inaccessible islands in the center of the archipelago that serve as a *de facto* refuge. Further, none of the three birds are sought as game species. All three have been protected by U.S. Trust Territory laws, and continued protection is planned by the independent Nation of Palau upon termination of the Trust agreement. Further, the new constitution of Palau will ban the personal possession of firearms, making it illegal to hunt with such weapons.

If the proposal to delist the three Palau forest birds is made final, it will serve as official recognition that these species are secure and no longer in need of protection under the Endangered Species Act; therefore, such protection will be removed. The birds should continue to prosper under local conservation laws.

Comments on the delisting proposal are welcome from all interested agencies, organizations, and individuals, and should be received at the Service's Region 1 Office by November 19, 1984. (See page 2 of the BULLETIN for address.)

Measures to be Proposed for Reducing Lead Poisoning in Bald Eagles

The Service has announced plans to propose new conservation measures designed to reduce the risk of lead poisoning in bald eagles (*Haliaeetus leucocephalus*).

Bald eagles in most of the 48 contiguous States are listed as Endangered, except in Washington, Oregon, Minnesota, Wisconsin, and Michigan, where they are classified as Threatened. Bald eagle numbers have been increasing in recent years, but the species has not fully recovered from earlier declines caused by the effects of pesticides—particularly DDT—and loss of habitat. Examinations of bald eagles that have been found dead indicate that some have died of lead poisoning.

Lead poisoning in bald eagles has been related to waterfowl hunting because bald eagles sometimes prey on waterfowl, particularly during winter. Biologists have concluded that bald eagles get lead poisoning primarily from ingesting lead shotgun pellets embedded in the tissue of ducks and geese that have been shot, but not retrieved by hunters, rather than from eating waterfowl that have themselves died of lead poisoning. (Waterfowl can develop lead poisoning when they swallow grit, sometimes containing spent lead shotgun pellets, from marsh bottoms to help grind food in their gizzards. Also, lead pellets are mistaken for hard seeds. In either case, if they are retained in the gizzard, they are converted to soluble lead salts, absorbed into the blood, and transported to various parts of the body. Anemia and nerve system disorders are the early signs of lead poisoning.)

In a September 14, 1984, *Federal Register* notice, the Service proposed a conservation effort that would include the establishment of three categories of areas where there is evidence that bald eagles have either died from lead poisoning or could potentially be affected by lead poisoning. While now identified by county, the Service may later refine these areas to more specific ecological units, such as river basins. Currently, the Category I areas, those of the greatest concern, are Siskiyou and Modoc Counties (California), Klamath and Jackson Counties (Oregon), and Holt County (Missouri).

After a review of public comments and any additional scientific data, the Service will make a final decision on whether or not to ban the use of lead shot in these counties during the 1985–86 waterfowl hunting season. If such a ban on lead shot use does take effect, the use of non-toxic (steel) shot

for waterfowl hunting would still be allowed.

Another 14 counties in 11 States (see the September 14, 1984, *Federal Register*, page 36291, for details) are in Category II. A more rapid acquisition and review of lead poisoning data affecting eagles in Category II areas may result in some of these counties being added to Category I. The Service is requesting public comment and all available biological data on whether or not any of these counties should be designated as nontoxic shot zones for the 1985–86 season. For another 10 counties in 7 States—Category III areas—the Service will review whatever additional data become available. The approach for Category III counties will fo-

cus on further research into possible lead poisoning problems unless new information is received that indicates immediate action is needed.

The Service and several States have been studying lead poisoning in bald eagles for about 10 years. The subject of lead poisoning in waterfowl has been a matter of concern for about 50 years, and in 1976 the non-toxic shot program for waterfowl hunting was initiated. In 1984, the Service published non-toxic shot regulations for waterfowl hunting for portions of 32 States. These "steel shot" zones have been created to protect waterfowl, but the protection of bald eagles will undoubtedly receive more attention as non-toxic shot zones are identified and proposed in the future.

Survey Results Encouraging for Bald Eagle in Idaho Region 1

During 1984, surveys for nesting bald eagles (*Haliaeetus leucocephalus*) were conducted by the Bureau of Land Management in the Brownlee/Hells Canyon reach of the Snake River. In northern Idaho, with joint cooperation from a number of Federal and State agencies, intensive surveys were made to confirm persistent rumors about nesting bald eagles. One occupied nest was found in the Brownlee/Hells Canyon area. Three new nests were confirmed in northern Idaho, two of them productive. Table 1 lists a 6-year reproduction summary of known bald eagle pairs in Idaho:

Table 1. Reproductive summary of known bald eagle pairs in Idaho from 1979 to 1984.

Year	Occupied Nests	Productive Nests	Total Young	Young/Occupied Nest
1979	11	8	10	.91
1980	12	9	13	1.10
1981	13	10	18	1.40
1982	15	9	15	1.00
1983	13	12	17	1.30
1984	20	11	21	1.05

In Table 2, a statistical profile is provided for the 1984 nesting season. Due to the efforts of dedicated biologists in eastern Idaho, an excellent report was filed regarding bald eagle occupancy and productivity. A total of 13 young in eastern Idaho were banded, and they may begin to give us data on dispersal to first nesting sites, mortality sources, and migratory patterns.

Table 2. Statistical summary of bald eagle territories surveyed in Idaho during 1984.

Territories surveyed	22
Number occupied	20
Percent occupied	95
Percent occupied territories successful	55
Successful nesting pairs	11
Young produced	21
Young/occupied territory	1.05
Young/successful territory	1.91
Number of territories not checked	0

Mussel

continued from page 3

it will gain are a better recognition of its vulnerable status, the development of a plan for its recovery, possible Federal aid to State conservation programs for the mussel, and prohibitions against such practices as taking, possessing, or engaging in interstate or international trafficking in the species.

Because of its rarity and uniqueness, the Service decided that publicizing the mussel's exact range with a formal designation of Critical Habitat could increase its vulnerability to illegal taking by collectors. Even without such a designation, however, listing the Tar River spiny mussel as an Endangered species will confer all Section 7 habitat protection. Federal agencies will be required to ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the species' survival or adversely modify its habitat.

Potential Federal activities that could have an impact on the mussel include the issuance of permits for hydroelectric facilities, stream alterations, reservoir construction, development of wastewater facilities, and certain road and bridge projects. However, it has been the experience of the Service that nearly all Section 7 inter-agency consultations are resolved so that the species is conserved and the project objectives are met.

Comments on the listing proposal are welcome from all interested individuals, organizations, and agencies, and should be sent by November 16 to the Field Supervisor, Asheville Endangered Species Field Station, U.S. Fish and Wildlife Service, 100 Otis Street, Room 224, Asheville, North Carolina 28801.

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED			THREATENED			SPECIES* TOTAL	SPECIES HAVING PLANS
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only		
Mammals	18	19	233	4	0	22	296	21
Birds	59	13	144	3	1	0	220	50
Reptiles	8	6	60	8	4	13	99	10
Amphibians	5	0	8	3	0	0	16	5
Fishes	29	4	11	13	3	0	60	34
Snails	3	0	1	5	0	0	9	7
Clams	22	0	2	0	0	0	24	13
Crustaceans	3	0	0	1	0	0	4	1
Insects	8	0	0	4	0	0	12	6
Plants	64	5	1	9	2	2	83	31
TOTAL	219	47	460	50	10	37	823	178**

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

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

Number of Recovery Plans approved: 157

Number of species currently proposed for listing: 31 animals
30 plants

Number of Species with Critical Habitats determined: 63

Number of Cooperative Agreements signed with States: 41 fish & wildlife
14 plants

September 30, 1984

New Publication

A new 1985 *Endangered Wildflowers Calendar* has been published by the American Horticultural Society. The attractive wall calendar (8 1/2 by 23 inches when open) features color photographs of rare plants from all over the United States, data on all species pictured, and information on the problems facing endangered plants in general.

Proceeds from the calendar sales will be used to support conservation projects, including a reward fund for information on surviving individuals of plants thought to be extinct. The calendars are available for \$5.95, and orders should be addressed to the Endangered Wildflowers Calendar, American Horticultural Society, P.O. Box 0105, Mount Vernon, Virginia 22121. Checks should be made payable to the American Horticultural Society.

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Technical Bulletin

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