

ENDANGERED *Species* BULLETIN

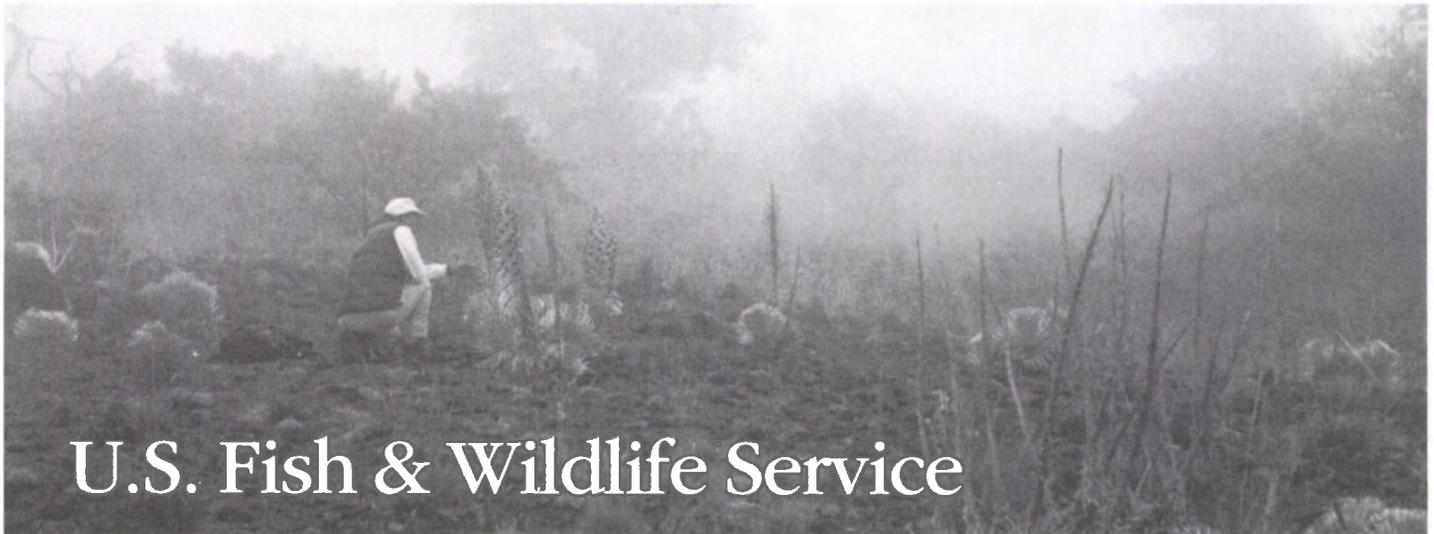
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*In July 1976, the Fish and Wildlife Service published its first issue of the **Endangered Species Technical Bulletin**, a publication to keep people informed about developments in the endangered species program. To mark the Bulletin's twentieth anniversary, this issue takes a look back at some of the subjects and species covered in the first year and reflects on their current status.*

Like the endangered species program itself, the Bulletin has evolved over time. Last year, to help promote greater public information and outreach, we shortened the Bulletin's original name, adopted a theme approach, and launched a new design. We are interested in your comments and suggestions, and—as always—we welcome your contributions.



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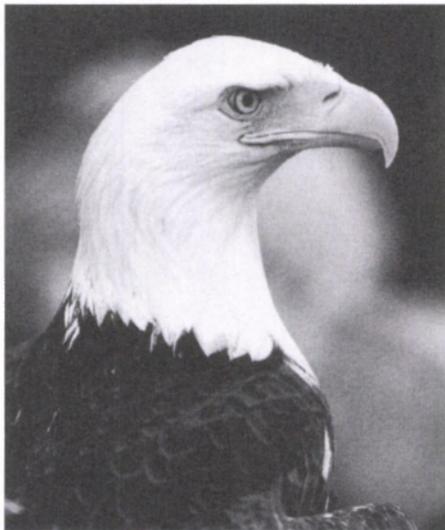
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On the Cover
 A symbol of success for the endangered species program, the bald eagle was reclassified last year to the less critical category of threatened.
photo by B. "Moose" Peterson/WRP

Opposite Page
 Dr. Rob Robichaux, a specialist in the conservation biology of Hawaiian silverswords, examines a flowering individual on the misty east slope of Mauna Kea.
photo by Joan Canfield/USFWS

The Endangered Species Bulletin welcomes manuscripts on a wide range of topics related to endangered species. We are particularly interested in news about recovery, interagency consultation, habitat conservation plans, and cooperative ventures. Please contact the Editor before preparing a manuscript. We cannot guarantee publication.

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IN THIS ISSUE

4 Woman of the Woods



6 It Was 20 Years Ago Today. . . .

8 Two Decades of Change

10 Looking Back, Forging Ahead

12 Progress in Plant Protection

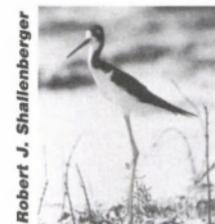


16 A Closer Look at Recovery

18 The Hawaiian Islands, 20 Years Later

22 New Hope for the Schaus Swallowtail

24 Working with States to Conserve Wetlands



Departments

27 Regional News and Recovery Updates

Woman of the Woods

I first met Mollie shortly after she arrived in Washington. She had consented to a series of personal interviews for a profile I was writing. I remember her pageboy haircut, her radiant face, utterly devoid of makeup, and her smart blue suit with brass buttons—a visible concession from someone who otherwise lived in jeans. Later I would speak with her about topics as diverse as tropical forests, endangered species and the National Biological Survey.

Mollie Beattie, who served as Director of the Fish and Wildlife Service from 1993 until her fight with cancer forced her to resign, passed away June 27 at a private hospital near her home town of Grafton, Vermont. In her memory, we are reprinting excerpts from a tribute by Ted Gup published in the July 1, 1996, *Washington Post*.



"This is the legacy I would like to leave behind: I would like to have stopped the ridicule about the conservation of snails, lichens, and fungi and instead move the debate to which ecosystems are the most recoverable and how we can save them, making room for them and ourselves."

**—Mollie H. Beattie
Director, U.S. Fish and
Wildlife Service
1993-1996**

Conservationists immediately embraced her appointment to direct the Fish and Wildlife Service as the ultimate victory. She was one of their own. But Mollie shunned the notion of being an eco-evangelist, combining hard science (a degree in forestry from the University of Vermont), a master's in public administration from Harvard, and a child's sense of awe. It would prove to be an irresistible combination for political friend and foe alike.

She helped to elevate the level of national debate while lowering levels of distrust and enmity that characterized much of the conservation issues in the '90s. During her brief watch at the Fish and Wildlife Service, another 15 wildlife refuges were added, more than 100 habitat conservation plans were agreed on between landowners and the government, and the gray wolf was reintroduced into the Northern Rockies. The wolf was one of her two favorite animals, the other being coyotes. "There's something so wily and elusive and mysterious—they almost seem magical, the coyotes."

She always took the broad view of nature and of man's relationship to it. "I believe there's only one conflict," she told me, "and that's between the short-term and the long-term thinking. In the long term, the economy and the environment are the same thing. If it's unenvironmental it is uneconomical. That is a rule of nature."

Last month legislation was introduced in the House and Senate to name an 8-million-acre wilderness reserve in the Arctic National Wildlife Refuge after her. Not a bad way to be remembered.

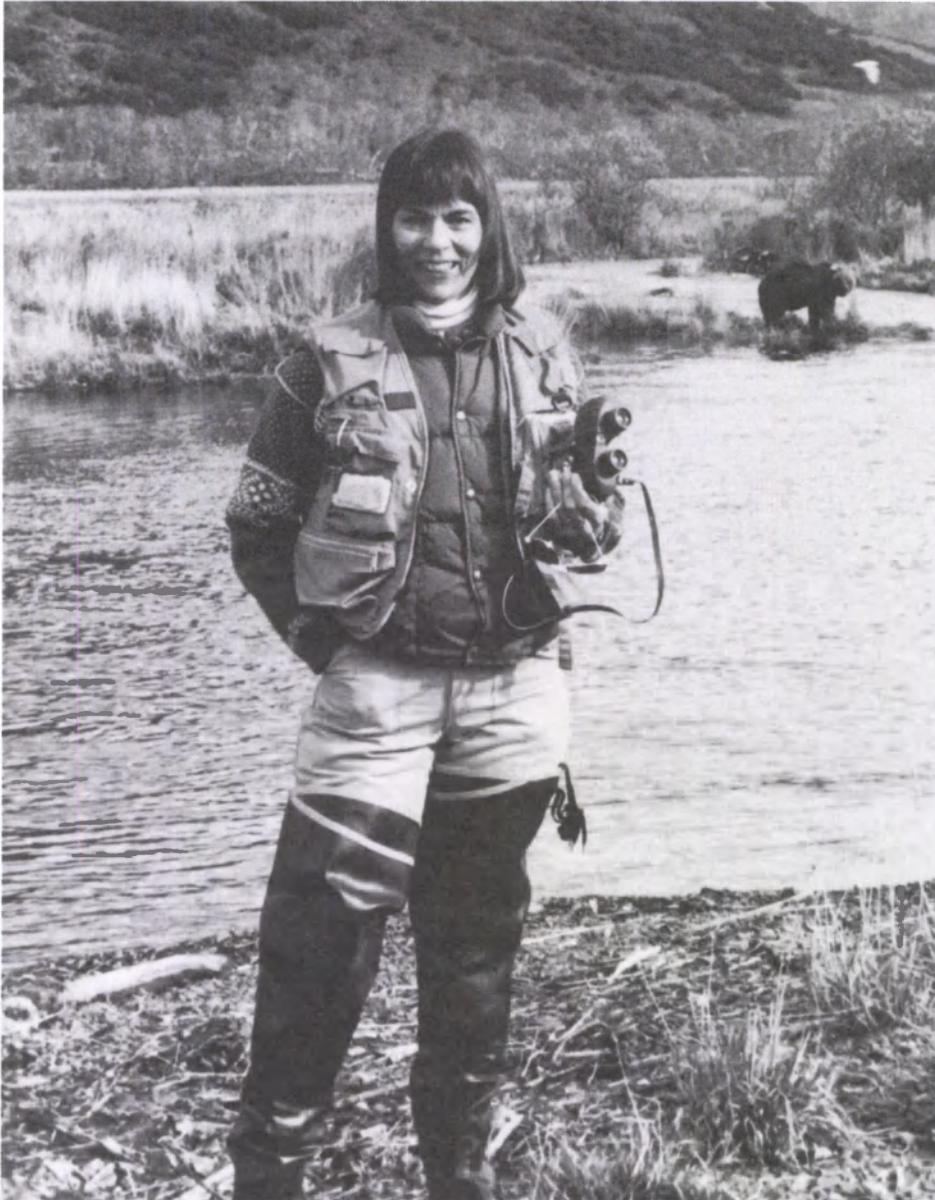
Mollie's last day of consciousness was Tuesday, June 25, a time when closest friends and family gathered at her bedside at the Grace Cottage, part of a tiny village hospital. Present too was Dozer, her big brown mutt with crooked ears and graying muzzle. It was said that the nurses spent as much time feeding Dozer as caring for the patients—again Mollie's talent for getting others to provide for nature. Toward the end, in a moment of solemnity, Mollie was asked if there was anything else she needed. After a second's

reflection, a mischievous glint came into her eyes. "Potato chips," she said. The room erupted in laughter.

There was always a sense that the world had come to Mollie's door, and not the other way around. Atop her stunningly understated three-page résumé was her address, a box number on Rural Route No. 3, in Grafton, Vermont. She lived a mile from the nearest utility pole in a house of wood she and her husband, Rick Schwolsky, built amid 142 acres of beech, birch and maple—red and sugar—on a gentle south-facing slope. There she kept her bees and shared the honey with an occasional black bear, driving him off only when he took too much.

There was no television in her house, and in the living room hung a painting of a woman standing with her hand on an oak tree. The woman is depicted speaking, but instead of words, oak leaves are coming out of her mouth. The picture was titled "A Woman Who Speaks Trees." It was one of the few possessions that Mollie said really meant anything to her. I can think of no more fitting epitaph. Mollie, too, was "A Woman Who Speaks Trees."

Ted Gup is writer-at-large for Gentleman's Quarterly and teaches journalism at Georgetown University.



Walter O. Stieglitz/USFWS

In a message to agency employees, Acting Director John Rogers spoke for all who knew Mollie Beattie:

"To us, Mollie was a leader, a colleague, and a friend. We grieve her death along with her entire family. At the same time, we give thanks for Mollie's life—a life of fullness, and a life marked by dedication, vision, and accomplishment. Her passion for wildlife and her compassion for people touched all who knew her and worked with her.

It would be difficult to overstate the positive impact Mollie had on the Service. She guided us with a steady hand through a difficult time when our fundamental mission to conserve wildlife for future generations was challenged. Because of Mollie, we have come through this period a stronger agency, focused on our conservation mission and better prepared for the future. She did honor to the legacy of Aldo Leopold, who inspired her career, and former Service employee Rachel Carson, whom she deeply respected and admired. Most of all, we will remember Mollie for her indomitable spirit, her great sense of humor, and the integrity of her character. We will miss her dearly."

It Was 20 Years Ago Today....

The year was 1976. The Endangered Species Act, barely 2 years old, was just beginning to become operational. Already, people all around the country, in and out of the Fish and Wildlife Service (FWS), were passionately committed to endangered species conservation. But the FWS endangered species program consisted of just two dozen staff members, all crowded into a small office in downtown Washington, D.C.

It was already clear that this was much too small a program to effectively implement a very large and complex law, and that rapid national growth in endangered species conservation efforts was about to come. The question was how to keep the public informed about this growth as it occurred. That's when the FWS public affairs office had the idea of a monthly endangered species publication, prepared by the program staff and designed to be a document of record summarizing the status of conservation efforts for threatened and endangered species.

FWS Associate Director Keith Schreiner and Endangered Species Chief Ron Skoog immediately recognized the value of the idea and asked Branch Chief Gene Ruhr to make it happen. Gene in turn asked me to take on the editing of the publication as an addition to my regular duties. Then, Bill Howard, an independent editorial contractor, was hired to take all of the information we fed him each month and write the copy, telling as much of our story as

would fit into four pages. From its first issue, the *Bulletin* was a publication destined to succeed. The huge demand for more information about endangered species and what was being done to rescue them—not just by the FWS, but by all Federal, State, local, and private organizations involved in the endangered species effort—ensured that the *Bulletin* would be well received.

Still, we had no way of knowing that 20 years later, the *Bulletin* and the endangered species program it reflects would have grown into what they have become today. The *Bulletin* has become a far more professional and informative publication, and the electronic age has made it accessible to many more people than our July 1976 press run of 2,000 copies could reach. As for the endangered species program, a quick comparison of the “Box Score” of program activities in that first issue versus the one on the last page of this issue summarizes what has happened to the program in the past 20 years: 608 species throughout the world listed

as endangered or threatened then, versus 1,525 now; only 3 recovery plans approved, versus 424 now; just 11 States participating in cooperative agreements, versus all 50 now.

Where we will be 20 years from now? It's just as hard to predict the future today as it was in 1976. Still, I believe one thing is sure: the *Bulletin* is in good hands, and as long as there is a national endangered species program, there will be a ravenous demand for the

Bulletin and the kind of information that it provides—whether it comes by hard copy, the Internet, direct satellite to everyone's home television, or some as-yet-undreamed-of technology.

Marshall Jones, the FWS Assistant Director for International Affairs, was Editor of the Endangered Species Technical Bulletin from its beginning in July 1976 to June 1977.

July 1976 Vol. I, No. 1



ENDANGERED SPECIES TECHNICAL BULLETIN

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

A Word About The TECHNICAL BULLETIN

With this issue of the ENDANGERED SPECIES TECHNICAL BULLETIN, the Fish and Wildlife Service inaugurates an information service for all agencies and organizations—Federal, State, and private—cooperating in the Endangered Species Program. The primary objective of the BULLETIN is to foster communication among professionals in the field and to help us all do a better job.

We feel this monthly publication is needed at this time because the Program is fully operable and moving full speed ahead. More and more people are becoming involved, especially at the State level. The act covers every animal and plant species, subspecies, and population in the world needing protection. There are approximately 1.4 million full species of animals and 600,000 full species of plants in the world. Various authorities calculate as many as 10% of them—some 200,000—may need to be listed as Endangered or Threatened. When one counts in subspecies, not to mention individual populations, the total could increase to three to five times that number. Our current box score of species listings (see page 2) shows we are making progress, but that the task is enormous—we have only just begun.

In the first issues of the BULLETIN, we will be bringing you information on current and prospective Program actions that are required under the 17 sections of the law. Many of these actions are complicated, so we feel it will be important to clarify the technical details for you. Later we will be exploring the work of species recovery teams, the determination of critical habitats, the development of interagency and State cooperative agreements, law enforcement efforts, and programs of land acquisition and research that are designed to return endangered or threatened species to a viable condition.

As future developments warrant, we plan to delve into certain biological, legal, and other questions affecting the Program. We also plan to present the views of our readers—how you are attacking problems in the field—and to pass along to others your hard-earned lessons. Our efforts—plus yours—are what are needed to get the job done.

Keith M. Schreiner
Associate Director and Endangered Species Program Manager
U.S. Fish and Wildlife Service

First U.S. Plants Proposed as Endangered

In excess of 1,700 plants located in 46 States have been proposed for listing as Endangered (F.R. 6/16/76). They are the first native plants recommended for this status. Seventy-four foreign plant species were proposed as Endangered last year (F.R. 9/26/75).

The newly proposed native plants represent about 8% of the seed plants and ferns in the nation and cover more than 100 plant families. Over half of the plants occur in Hawaii and considerable numbers are in California, Texas, and Florida.

Under the 1973 Endangered Species Act, the Smithsonian Institution was directed to review the status of plants and, in January

1975, it issued a report designating 3,187 plants as likely candidates for either Endangered or Threatened status. This report was accepted by the Service as a petition and published as a Notice of Review (F.R. 7/1/75). The current proposal results from a Service review of these candidates and public comments about them. Comments on this latest proposal must be submitted to the Service by August 16, 1976.

The Service has proposed regulations (F.R. 6/7/76) to cover the interstate and foreign commerce, sale or offer for sale, and import and export, of endangered or threatened plants, their seeds, roots, and parts. Interstate commerce would not be regulated. Comments due by August 9, 1976.

Eleven States Sign Agreements with FWS

Eleven States signed cooperative agreements with the U.S. Fish and Wildlife Service June 23, ushering in a new era in the conservation of endangered animals and plants.

The States are Arkansas, California, Colorado, Delaware, Florida, Michigan, New Jersey, New York, New Mexico, South Carolina, and Washington. They are eligible to share in about \$2 million of Federal aid to assist in the recovery of endangered or threatened species.

The agreements will bring a great many more conservation officers and wildlife biologists into the endangered species program. The Service has only some 180 law enforcement officers in the field, and only a few hundred field biologists. The 55 State and territorial conservation agencies, by contrast, have well over 5,000 experienced conservation officers and several thousand professional wildlife biologists trained in the management of wild flora and fauna.

Moreover, the States and territories possess millions of acres of land providing habitat for many of the 170 endangered American species of animals. Better habitat management for these species is the goal of the cooperative program.

Working out the 11 new agreements has been a lengthy process. Legal authority for State wildlife agencies had to be researched in State capitals, and, in some cases, new legislation had to be enacted to meet the requirements of the Federal law.

(continued on page 2)

159 Animals Added To Endangered Category

Removal of 159 more endangered taxa of animals (164 species, subspecies, and populations) from interstate commerce and import and export becomes effective July 14. The animals—mainly of foreign origin—were added to the Endangered list June 14 (F.R. 6/14/76).

The listing came about through a petition by the Fund For Animals, which had requested that all 216 taxa of animals and plants in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora be listed. The Service has deferred final action on the remaining 57 taxa to allow more time for review of public comments and biological data about them. The listing was proposed last September.

(continued on page 2)

Two Decades of Change

In the past 20 years, the FWS has developed a number of important tools for its endangered species "toolbox." One of the most significant is the habitat conservation plan, or HCP. It was created as a way for communities and landowners to promote endangered species conservation while minimizing the impacts of such conservation on their activities. Originally authorized by Congress in 1982, HCPs were not widely used until recent years. The November/December 1995 *Bulletin* (Vol. XX No. 6) focused on this increasingly used tool and highlighted several examples. Over 160 HCPs have now been approved nationwide, and more than 140 other such plans are being developed.

Other new tools were among the 10 principles to improve implementation of the ESA that were announced jointly by the Departments of the Interior and Commerce on March 6, 1995. (See *Bulletin* Vol. XX No. 3.) Among these is the "Safe Harbor" concept. Under a Safe Harbor agreement with the FWS, property owners are free to practice good stewardship that may attract listed species to their land while

When the *Endangered Species Bulletin* was launched 20 years ago, the Fish and Wildlife Service's (FWS) endangered species program was still very new. Only 608 animals, most of them foreign, had been classified under the Endangered Species Act (ESA) as endangered or threatened, and no plants were yet listed. The effort to restore vulnerable species gained momentum that year with approval of the first few recovery plans. Eleven States also had signed cooperative endangered species conservation agreements with the FWS, reflecting a trend toward multi-agency partnerships that continues to grow today.

The past 20 years have seen tremendous gains in our knowledge of biological diversity and our understanding of the threats facing its survival. One aspect of this progress has been the identification of species at risk of extinction. The number of taxa throughout the world listed by the FWS as threatened or endangered has risen to 1,525 (including 528 plants), and over 240 other vulnerable species have been proposed for listing. The FWS also has information on an additional 182 candidates suggesting that their listing is warranted (see article in *Bulletin* Vol. XXI No. 2). Determining which species need the protection of the ESA has been a team effort. The FWS, other Federal agencies, the States, academia, and the private sector have studied and resolved the status of several thousand species over the past two decades.

Efforts to evaluate species at risk continue, and the collaborative partnerships continue to grow.

Scientific standards for listing determinations have always been based on the best available scientific and commercial data. The FWS ensures that all proposed and final listing rules and all species recovery plans are subjected to independent scientific peer review. These efforts are paying off: in 1995, the National Research Council released a report, "Science and the Endangered Species Act," concluding that the current law is based on a foundation of sound biological science.

Another major change in implementation of the ESA over the past 20 years has been the shift from addressing the needs of individual species towards an approach that considers the health of entire ecosystems. This new way of

thinking reflects a growing awareness of the complex interrelationships among species and their habitats. Adopting an ecosystem-based model for wildlife conservation has not been easy, and it will continue to evolve over time. But it makes the most efficient use of limited funding and staffing resources, and should also prevent the need to list many additional plant and animal species in the future.

As the scope of conservation efforts has broadened, so have our working relationships with other Federal and State agencies, local communities, and the private sector. Partnerships may be the most critical element of effective conservation programs. By increasing cooperation and pooling resources, we can widen support for conservation and enable the participants to accomplish more with fewer dollars. No government agency by itself can ensure the survival of biological diversity.

With FWS guidance and support, other Federal agencies are taking a much more active role in fulfilling their conservation responsibilities under the ESA. Some now have effective species protection and recovery programs of their own. The interagency consultation process under section 7 of the ESA also has been refined over the years. Since 1987, Federal agencies have contacted the FWS about the potential effects on endangered species from approximately 200,000 proposed projects or other actions. Formal consultation (required when adverse effects to listed species are anticipated) was needed on fewer than 6,000 of these activities, and all but a small fraction of 1 percent were able to proceed.

State conservation agencies are vital partners in endangered species conservation. All 50 States, along with several commonwealth and territorial governments, now have cooperative endangered species agreements with

the FWS and are eligible to receive Federal grants for work with endangered and threatened species.

The ESA has been referred to as "nature's emergency room," and it probably has the most impressive success of any emergency room. Preventing the extinction of vulnerable plant and animal species is the most immediate goal of the FWS endangered species program. Of all the species listed between 1968 and 1993, 99 percent still survive. Despite a substantial increase in the number of species classified as endangered or threatened over the past decade, the combined recovery efforts of the FWS and its partners have managed to limit species in decline to only 35 percent of listed plants and animals. Almost 60 percent of the species that were listed the earliest (before 1973), and have benefited the longest from recovery efforts, are stable or improving in the wild. Over 600 listed plants and animals now have approved recovery plans, and many other plans are in development. Thousands of recovery actions have been carried out, and the progress in species restoration made in two decades is impressive, especially when one considers that it took several centuries for some species to decline to the point of needing ESA protection.

As the endangered species program continues to evolve over the next 20 years, building more public/private partnerships, developing new incentives, and increasing public understanding of the importance of biological diversity to all people will be among the most important challenges the endangered species program will face.

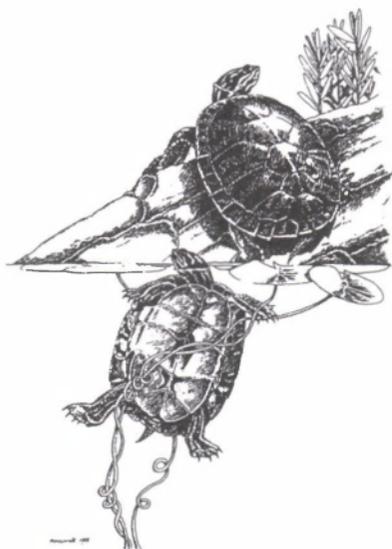
E. LaVerne Smith is Chief of the FWS Division of Endangered Species in Washington, D.C.

retaining the right to convert the land to other uses in the future without penalty. The Safe Harbor approach to land management is growing rapidly, especially in the Carolina Sandhills region, where golf course managers, timber companies, and individuals are using it to reach an accommodation with the needs of the endangered red-cockaded woodpecker (*Picoides borealis*).



Looking Back, Forging Ahead

Recovering endangered species is the cornerstone and ultimate purpose of the Endangered Species Act (ESA). Recovery is the process by which the decline of an endangered or threatened species is arrested or reversed, and threats to its survival are lessened or removed, so that its long-term survival in the wild can be ensured. The goal of this process is to restore listed species to a point where they are secure, self-sustaining components of their ecosystems and can be removed from ESA protection. This is among the most important tasks delegated to the FWS; it is also perhaps the most challenging.



The Plymouth redbelly turtle (*Pseudemys rubiventris*), protected since 1980 as an endangered species, is improving in status. With funds provided by the FWS under section 6 of the ESA, the state of Massachusetts has been protecting nest sites and tracking the survival of turtles released into the wild. Worcester State College, the University of Massachusetts, and the private sector are cooperating in the recovery effort for this species.

Recovery plans serve as blueprints for the survival of species teetering on the brink of extinction. Such plans identify actions for conserving listed species and the ecosystems on which they depend. Putting these survival guides into action depends on the cooperation of all willing partners, such as private landowners, corporate citizens, Native American tribes, and Federal, State, and local agencies.

Twenty years ago, the August 1976 edition of the *Endangered Species Technical Bulletin* featured a story on the FWS Recovery Program. Both the ESA and the Recovery Program were still quite young. At that time, 178 domestic animal species had been listed and the FWS had yet to list a plant species. It had assembled 57 recovery teams composed of on-the-ground professionals responsible for guiding the development of recovery plans for 68 listed species.

While we have learned much over the last 20 years, the challenge of

recovering endangered and threatened species is nonetheless daunting. But we have demonstrated that recovery is achievable. Today, 960 species are listed in the United States as endangered or threatened, including 435 animals and 525 plants. Recognizing that endangered species can only be recovered in the context of their surrounding environment, the FWS is promoting the development of ecosystem-based recovery plans and multiple species recovery plans. To date, 424 recovery plans have been approved for 601 species, meaning that about 70 percent of listed species have recovery plans in place. Many other plans are being developed.

Fostering partnerships has never been more integrated into the Recovery Program than it is today. While the FWS has always recognized the importance of reaching out to stakeholders in an effort to implement recovery actions, the release of the Administration's 10 Point Plan in July 1994

initiated a policy of providing even greater opportunities for State, tribal, and local government involvement in recovery planning and implementation. (See *Bulletin* Vol. XX No. 3.)

A report authored by Bruce Stein and Richard Warner of The Nature Conservancy and Tom Breeden of the Association for Biodiversity Information analyzed data recorded by Natural Heritage programs nationwide on federally listed species. It demonstrated the vital role partnerships must play if recovery of listed species is to be achieved. Natural Heritage program data indicated that of 24,573 occurrences of endangered and threatened species, 36 percent were found on Federal lands, with 3 percent of these occurrences protected in the National Wildlife Refuge System. Approximately 25 percent of all listed species had over one-half of their known occurrences on Federal land and could benefit substantially from recovery actions on those lands. The study found that 50 percent of federally listed species are not known to occur on Federal land, and that 64 percent of all occurrences known at that time were on nonfederal land. These findings suggest that if recovery of these species is to be achieved, it must be with the consent and cooperation of other State, Federal, and local agencies, Native American tribes, corporate citizens, and—most importantly—private landowners.

The results over the last 20 years in recovering endangered species have been impressive. Perhaps the greatest achievement is that, since passage of the ESA, extinction has been prevented for 99 percent of listed species.

The 1994 FWS Report to Congress on the Endangered and Threatened Species Recovery Program (see *Bulletin* Vol. XXI No. 1) provides the most comprehensive analysis of the success of the program. It reveals that 58 percent of the species that were listed between 1968 and 1973 are now known to be stable or improving in their native habitats. The report

indicates that even with a substantial increase in the number of species listed over the past decade, over 41 percent of the 909 species listed by the time of the report (September 30, 1994) are stable or improving.

Another measure of the success of the recovery program over the last 20 years is the number of species whose status has been improved, resulting in reclassification of the species from endangered status to threatened. Sixteen domestic species have had their status officially upgraded to threatened. Nearly 20 other species are being actively considered for possible reclassification. Ten species have achieved the ultimate goal of being declared recovered. Sadly, 7 species have gone extinct since being listed; however, one study has indicated that at the time of their listing, most animal species had been reduced to fewer than 1,000 individuals in the wild, and for plant species the numbers were commonly fewer than 120.¹

With a commitment to cooperation and the recognition that private landowners, corporate citizens, State, tribal and local governments, and Federal agencies are all stakeholders in the conservation of endangered and threatened species, the FWS believes that it is possible to conserve our Nation's endangered and threatened species and the ecosystems on which they depend. Together, we will forge ahead in tackling this challenge.

¹ Wilcove, David S.; Macmillan, Margaret; Winston, Keith C. What Exactly is an Endangered Species?: An Analysis of the U.S. Endangered Species Act. *Conservation Biology* 7(1):87-93; 1993.

Richard Hannan is Chief of the Branch of Information Management, Division of Endangered Species, in Washington, D.C.

Progress in Plant Protection

Growing from a cliff face, this Mauna Kea silversword is out of reach of the introduced goats and sheep that ravaged most populations. Some areas are now protected from these animals by fences.

Joan Canfield/USFWS

Protection for the Nation's endangered plants has advanced dramatically over the past 20 years. In 1976, the inaugural issue of the *Endangered Species Bulletin* announced the very first proposals to place U.S. plants

on the endangered species list. At that time, no plants were protected by the Endangered Species Act (ESA). Today, however, plants comprise over half of the Nation's listed species.

When enacted in 1973, the ESA directed the Smithsonian Institution to review the status of U.S. plants and report back to Congress by January 1975. Hired by the Smithsonian to help with this task in June 1974, I spent the summer poring over every available floral manual in the National Museum of Natural History's library, documenting on 3-by-5 cards any plant described as rare or having a highly limited distribution. Refined by botanical specialists from around the country, this preliminary list was the first step in extending ESA protection to the plant kingdom.

The January 1975 Smithsonian report identified 3,187 plants as potential candidates for listing. It was accepted and published by the Fish and Wildlife Service (FWS) as a notice of review in July 1975. The *Bulletin's* first issue reported that,



after public comment and FWS analysis, over 1,700 of those plants were proposed for listing as endangered as of June 1976. The *Bulletin's* third issue reported on the "conflicting views" voiced at four public hearings held in the summer of 1976 on the plant proposals. The major issues parallel concerns echoed in 1996 about reauthorization of the ESA and efforts to increase its flexibility:

- A State agency favored striking a balance between human needs and the needs of endangered species.
- Environmental and commercial enterprises disagreed over the need to preserve plant species in their natural habitat vs. propagating and maintaining them in non-wild settings.
- A scientist advocated species protection to maintain the ecosystems that we depend on for such basic needs as clean drinking water.

Compared to today's roster of proposed U.S. species (196 plants; 42 animals), that blanket proposal of 1,700 plants is striking. However, after the 1978 amendments to the ESA set a limit on the time allowed for completing listing actions, the proposals for most of those plants had to be withdrawn in 1979.

Meanwhile, in 1977, the first plants were placed on the endangered species list: four species from San Clemente Island, California. By January 1980, 56 plants were listed. Ten years later, the roster had grown to 218 plants. Federal protection for plants has improved even more dramatically in the 1990's. Today, plants account for 55 percent of the nation's 960 listed species. During this decade, the FWS has become more efficient at processing plant listings. For example, in one instance the FWS grouped 25 species from a single area or ecosystem into a single rulemaking package. In addition to the 525 listed plants, 196 proposed plants currently await a final listing decision, and 81 more are candidates for listing. The slate of plants at risk of extinction is not yet wiped clean.

Where do these plants come from? Just as the *Bulletin's* first issue stated, most proposed and listed plants today are native to Hawaii, California, Florida, or Texas. Almost half (260) of the currently listed plants are either from Hawaii or California. Every State but

Ash Meadows sunray (*Enceliopsis nudicaulis* var. *corrugata*). Twelve plant, fish, and insect species endemic to Ash Meadows, an unusual system of wetlands in the Mojave Desert, are protected in a national wildlife refuge.

Susan Cochrane





**Kenwood Marsh
checkermallow (*Sidalcea
oregana* ssp. *valida*), a
California plant proposed
for listing as endangered.
photo courtesy of the California
Native Plant Society**

sandwicense ssp. *macrocephalum*), which was imperiled by feral goats. Even public education can lead to recovery, if a local community adopts a plant and protects its habitat, or—as in the case of the eastern prairie fringed orchid (*Platanthera leucophaea*) in Illinois—volunteers pollinate the flowers by hand and later disperse the seed.

The FWS is increasingly conscious of the need for stewardship of our “green creatures.” Lake Wales Ridge in central Florida is the site of the first National Wildlife Refuge established for the protection of endangered plants. In addition to recovery plans, separate habitat conservation plans are being set up for some listed plants, as well as animals, in habitats such as coastal sage scrub in southern California.

The FWS has also joined a national public/private partnership to protect the country’s native plants and their habitats. The Federal Native Plant Conservation

South Dakota contains at least one native listed plant.

What factors drive plants to the point of needing ESA protection? Habitat destruction and modification are primary causes. Predation or trampling by domestic or feral animals often plays a significant role. On islands such as San Clemente or the Hawaiian chain, competition from aggressive, non-native plants is a major factor. Native plants with commercial value, such as cacti, orchids, and carnivorous plants, are threatened by excessive collection. Finally, some plants that have been reduced to very small populations risk extinction because of a limited gene pool and inbreeding depression. In other situations, the loss of a pollinator or seed-dispersal agent may push a specialized plant toward extinction.

The good news is that often simple, relatively inexpensive recovery measures can turn the fate of a listed plant around. Unlike most animals, plants don’t migrate or wander, and reproduction is typically a less complicated affair. In most cases, controlled propagation is far cheaper and more successful for plants than for animals. Fencing out predators has led to amazing increases in species such as Hawaii’s threatened Haleakala silversword (*Argyroxiphium*

Committee, established in May 1994, includes five agencies from the Department of Interior, three from the Department of Agriculture, and the Department of Defense. Fifty-three non-Federal institutions from across the country are official cooperators. This initiative sponsors on-the-ground conservation projects through the National Fish and Wildlife Foundation and outreach efforts such as the "Celebrating Wildflowers" program. It also serves as a national clearinghouse for professional, lay, and governmental groups interested in promoting the conservation of native plants within healthy ecosystems.

Just as in 1976, many plant species are now awaiting consideration for Federal protection under the ESA. With the lifting of the Congressional listing moratorium in April 1996, the FWS has embarked on an effort to swiftly resolve the backlog of proposed species. Before the close of this year, we hope to publish final listing decisions on the majority of roughly 150 proposed plants that now face imminent, high magnitude threats.

Recovery plans (often covering multiple species, and sometimes both plants and animals) continue to be prepared with the help of experts in universities and State agencies. Although endangered species funding is limited, recovery efforts through State and Federal agencies are improving the status of many of our 525 listed plants. Conservation agreements aid efforts to protect plants before they reach the point of needing to be listed. Rare pitcher plant species are now covered by such agreements on timber lands owned by the International Paper Corporation.

By the time the *Bulletin* celebrates its 40th anniversary, I look forward to seeing a still larger step forward in the protection of our Nation's plant heritage.

Dr. Canfield, the FWS representative on the Federal Native Plant Conservation Committee, is native plant coordinator and a biologist with the Division of Endangered Species in Washington, D.C.



**Sacramento prickly poppy
(*Argemone pleiacantha*
ssp. *pinnatisecta*)**

Peggy Olwell

A Closer Look at Recovery

Twenty years ago, status summaries on several endangered birds were reported in the first *Bulletin* article to feature the recovery program. An update on what has happened to three of these species over the past two decades illustrates that recovery is usually possible, although not inevitable.

Everglade Snail Kite (*Rostrhamus sociabilis plumbeus*)

The August 1976 issue of the *Endangered Species Technical Bulletin* reported that the recovery plan for the Everglade snail kite would be released shortly. The account discussed components of the plan and research indicating that Lake Okeechobee was a significant gathering and nesting area, particularly in drought years.

The population of the Everglade snail kite has stabilized since 1976 and apparently increased, particularly in the past two years, due in part to wet habitat conditions. Since the 1976 article, the recovery plan has been finalized and has undergone four revisions. While the kite was primarily restricted to an area south of Lake Okeechobee 20 years ago, it has reestablished itself in much of its historic range. Kites

are now found breeding and feeding in the Kissimmee Chain of Lakes area and the marshes of the Upper St. John's River. Annual snail kite surveys from 1969 to 1978 indicated population counts of 65 to 267 birds. In the 1990's, surveys produced counts of from 378 to 996 individuals.

Research has shown that population fluctuations are synchronized with drought/flood cycles, but the species does appear to be resilient and the population seems to be increasing. Radio-tracking studies conducted by University of Florida researchers have shown that snail kites will travel long distances to where their main food source, the apple snail, can be readily found. University researchers also have begun studies on the apple snail itself, and on the effects of natural and human-caused drydowns on their abundance. While the kite still needs ESA protection, the FWS is working on criteria for reclassifying this bird to the improved category of threatened.

Mississippi Sandhill Crane (*Grus canadensis pulla*)

From 1929 to the early 1990's, the nonmigratory Mississippi sandhill crane population had fallen to fewer than 100 individuals. The 1976 account on the



Everglade snail kite

Paul W. Sykes, Jr./USFWS

Mississippi sandhill crane mentioned that the draft recovery plan recommended establishing an 11,000-acre (4,450-hectare) refuge for this subspecies. It also indicated that pending litigation involving an interstate highway project could impact the refuge project. The recovery plan was expected to recommend maintaining the captive breeding program at the Patuxent Wildlife Research Center in Maryland for 10 years as well as the reintroduction of cranes into their former range.

Since the 1976 article, a recovery plan has been finalized and undergone three revisions. The pending litigation mentioned in the original article was settled in favor of the FWS and supported protection of the crane. Over the last 20 years, the Mississippi Sandhill Crane National Wildlife Refuge has been established and now protects over 19,250 acres (7,790 ha). The captive breeding program has continued, and although the Patuxent flock has been disbanded, breeding flocks now exist at the Audubon Institute/Species Survival Center in New Orleans, Louisiana, and at the White Oak Conservation Center in Yulee, Florida. These cooperative efforts are producing young birds for release into the wild. Reintroduction efforts have proceeded since the early 1980's. The crane population at the refuge has grown to about 120 birds. While there have been some problems along the way, this subspecies continues to forge ahead, and the outlook for recovery looks good.



Mississippi sandhill crane
Scott Hereford

Dusky Seaside Sparrow (*Ammodramus maritimus nigrescens*)

The 1976 article said that a draft recovery plan indicated an immediate need to acquire habitat southwest of the Merritt Island National Wildlife Refuge on Florida's east coast. Habitat management was also recommended, and it was believed that it might be possible to extend the range of this songbird across the St. John's River.

The FWS subsequently established the St. John's National Wildlife Refuge. Unfortunately, a precipitous decline in the population was already underway. By 1980, only 4 singing males could be found. The decline in the bird's population was attributed to habitat fragmentation and degradation.

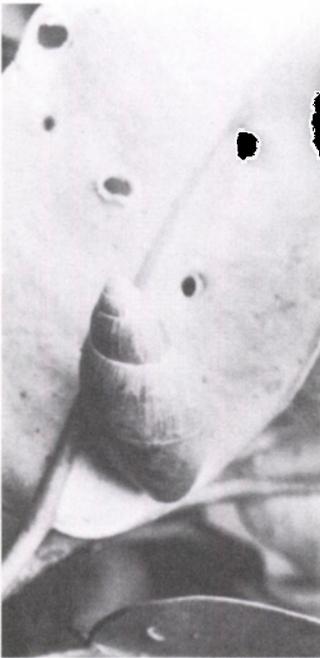
In 1980, a captive breeding program was established, but no female "duskies" could be located. Intercrossing with a closely related subspecies yielded several offspring, but it was believed that these progeny were not eligible for ESA protection because of their hybrid origin and could not be released into the wild. On June 16, 1987, the last dusky seaside sparrow died and the subspecies became extinct. In spite of attempts by a coalition of agencies and groups including the FWS, Florida Game and Freshwater Fish Commission, Florida Museum of Natural History, Florida Audubon Society, Santa Fe Community College Teaching Zoo, and Walt Disney World's Discovery Island, the dusky was lost.

Dusky seaside sparrow
USFWS photo



The Hawaiian Islands, 20 Years Later

Twenty years, virtually a lifetime in the eyes of a child, is but a blink of the eye in terms of biological history. Only once in every 100,000 years did a new species become established on the remote specks of land we call the Hawaiian Islands. And it even took humans about 1,500 years to destroy much of Hawaii's native wildlife.



Rosy snail
USFWS photo

So when the Fish and Wildlife Service's (FWS) Pacific Islands staff was asked to review our progress in saving Hawaiian endangered species over the past 20 years, our first thought was, "Have we made any progress?" Admittedly, we have taken a few steps backward, but we're also pleased to report that progress is being made, not just by the FWS but by our many public and private partners throughout the Hawaiian islands.

A Step or Two Backward

A feature article in the November 1976 *Bulletin* focused primarily on Hawaii's unique bird species and referred to 23 species and subspecies as being extinct. Sadly, we now believe 26 bird species, up to 900 tree snails, more than 100 arthropods, and 106 plant species have disappeared forever—more than 10 percent of Hawaii's native plants and animals.

Others cling precariously to life, including 9 bird species with estimated wild populations of fewer than 20 birds, 101 plant taxa with fewer than 20 remaining individuals in the wild, 12 arthropods with fewer than 3 remaining populations, and 13 tree snails with only 1 or 2 populations.

Alien species—recognized as a major problem in 1976—continue to wreak havoc in Hawaiian ecosystems. The Office of Technology Assessment estimated that approximately 5 new plant and 18 new arthropod species are introduced to Hawaii annually, many of which become serious pests.

Some alien species were introduced deliberately, but with good intentions. Banana poka (*Passiflora mollissima*) and fountain grass (*Pennisetum setaceum*) are examples of ornamentals that were brought to Hawaii to decorate gardens but which have escaped into native ecosystems with disastrous results. The rosy snail (*Euglandina rosea*) was imported from Florida to control burgeoning populations of another introduced species, the African giant snail (*Achatina fulica*). Unfortunately, its diet also includes Hawaii's endemic and beautiful tree snails. Tilapia (*Sarotherodon mossambicus*), an African fish introduced to control the growth of algae and weeds in reservoirs and irrigation ditches, may be impeding the recovery of native Hawaiian waterbirds by feeding on the same plants as the endangered Hawaiian coot (*Fulica alai*) and the same insects as

the endangered Hawaiian stilt (*Himantopus mexicanus knudseni*).

Today, new introductions generally occur accidentally—perhaps a weed seed on hiking boots or a hitchhiking insect—or are illegally smuggled species. Given Hawaii's tropical climate, it does not take long for these unwanted guests to become established pests in the wild.

Habitat loss continues to be a very serious problem for Hawaii's native plants and animals. More than 90 percent of Hawaii's dryland ecosystems, 61 percent of its mesic or moist forests, and 42 percent of its tropical rainforests already have disappeared. Only its less hospitable subalpine ecosystems are relatively intact, showing about a 3 percent loss.

Many Steps Forward

Despite these problems, cooperative efforts are making a difference in saving Hawaii's unique ecosystems:

Habitat Protection. Increased public awareness of the plight of Hawaiian ecosystems has led to significant support for protecting the most pristine of these environments. The State of Hawaii has placed 109,186 acres (44,188 hectares) in its Natural Area Reserve System, almost all within the last 20 years. Another 38,878 acres (15,734 ha) are managed by the State as wildlife sanctuaries, and another approximately 1,500 acres (607 ha) are within designated Marine Life Conservation Districts. Additional lands are protected to some degree as State parks or forest reserves.

The Nature Conservancy of Hawaii manages 29,193 acres (11,814 ha) in 10 preserves within the main Hawaiian Islands, all acquired during the last 20 years. This private organization seeks to protect Hawaii's rarest natural communities, thereby protecting many native species at the same time.

Since 1976, Pearl Harbor and James Campbell National Wildlife Refuges (NWR) have protected an additional 227 acres (92 ha) on O'ahu; 45 acres (18 ha) on Moloka'i were protected in Kakahaia NWR, 203 acres (82 ha) on Kaua'i became Kilauea Point NWR, 700 acres (283 ha) on Maui were designated as Kealia Pond NWR, and Hakalau Forest NWR on the Big island set aside 32,233 acres (13,045 ha) as a forest bird refuge. Beyond the State boundaries but within the Hawaiian islands archipelago, 90,097 acres (36,462 ha) of emergent and submerged lands were added to the refuge system as Midway Atoll NWR.

USFWS photo



The FWS also has been adding acreage in Hawaii to the National Wildlife Refuge System (NWR). Hawaii's 10 NWRs are managed to protect a diversity of native ecosystems, including high elevation tropical rainforests, coastal wetlands, and coral atolls. All provide habitat for threatened and endangered species as well as other native plants and animals.



Just outside a fence erected by the State of Hawaii to protect Mauna Loa silverswords (*Argyroxiphium kauense*), rooting by feral pigs has seriously damaged this fragile bog habitat.

Joan Canfield/USFWS

Recovery Plans. In 1976, none of Hawaii's threatened and endangered species were covered in approved recovery plans. The first plans—those for the palila (*Loxioides bailleui*) and Hawaii's four endangered waterbirds—were completed in 1978. Since that time, 17 recovery plans outlining activities needed to restore 143 Hawaiian taxa have been approved, and 27 other plans are in development.

Plant Protection. Although most of the listed Hawaiian species in 1976 were birds, 184 of the 211 species on today's list of threatened and endangered species in Hawaii are plants. Another 79 plant taxa have been proposed for listing.

Emergency actions such as spot fencing, seed collection and storage, and plant propagation are receiving significantly more attention—and funding—to save the most critically

endangered plant species. The FWS also is cooperating with the State to fence fragile bog ecosystems on Kaua'i to protect four plant species, including two candidate species that may, as a result, not need to be listed. Several botanical gardens are working with the State and Federal governments in cooperative efforts to build mid-elevation plant propagation facilities, collect and propagate plant materials, and put the resulting seedlings in protected habitat.

Help for the Birds. Hawaii's unique forest and water birds aren't being ignored. Perhaps one of the most exciting recent developments is the opening this year of the Keauhou Bird Conservation Center on the Big Island. The Peregrine Fund, a private organization based in Boise, Idaho, manages the facility in cooperation with the State of Hawaii and the FWS. Actively involved in captive propagation activities in Hawaii for several years, The Peregrine Fund has played a major role in developing propagation, rearing, and release techniques for Hawaiian forest birds, including the critically endangered 'alala or Hawaiian crow (*Corvus hawaiiensis*). So far in 1996, the facility's staff has successfully hatched 23 'oma'ō (*Myadestes obscurus*), 13 palila, 5 puaiohi (*Myadestes palmeri*), and 1 'alala.

The National Biological Service also is assisting in forest bird recovery activities. It is focusing its efforts on finding remnant populations of such rarely sighted birds as the nuku pu'u (*Hemignathus lucidus affinus*) and po'ouli (*Melamprosops phaeosoma*) on Maui and the puaiohi on Kaua'i, and on research into avian pox and avian malaria, which are two diseases thought to have played a major role in the loss of Hawaii's forest birds.

Populations of Hawaii's four endangered waterbirds—the Hawaiian stilt, Hawaiian coot, koloa or Hawaiian duck

(*Anas wyvilliana*), and common moorhen (*Gallinula chloropus sandvicensis*)—are on the rise as their wetland habitats are restored and introduced predators such as rats, feral cats, and mongooses are controlled. The FWS and State of Hawaii manage several wetlands set aside for waterbirds, and more private landowners are attracting these birds as they develop ponds or other wetland areas on their property.

Rekindling Interest in Hawaiian Culture

Although the native Hawaiian culture was never lost, it was somewhat dormant until fairly recently. Since 1976, however, an expanded interest in maintaining a native Hawaiian cultural identity has surfaced, accompanied by a renewed sense of natural resource stewardship.

The ecosystem approach to conservation is reflected in the Hawaiian concept of 'abupua'a, in which lands were managed "from the mountains into the seas." The early residents of Hawaii knew how important it was to protect the rainforests at higher elevations in order to protect their marine resources and the watershed, habitat, and species at all the intervening levels. They also established open and closed seasons on some species, as well as catch limits to ensure that essential resources would not be depleted.

This renewed interest in the early peoples of Hawaii has led to an awareness of her natural blessings by many of Hawaii's residents, including both old and new "immigrants." Although many of the plants and animals associated with Hawaii in the minds of its visitors are actually introduced species, many of the State's residents are increasingly interested in protecting native species, in restoring native habitats, in landscaping their yards with native species, in seeking out the colorful forest birds, and in ensuring a place for Hawaii's native plants and animals in the future.

Ohana Spirit Renewed

It's said that in times of crisis, family members will pull together to overcome adversity. With the increasing awareness of Hawaii's extinction crisis, the Hawaiian family—the *ohana*—of public and private entities is pulling together to protect Hawaii's unique natural ecosystems and the species that depend upon them.



As an example, the 'alala population in the wild consists of only 14 birds and would be lower if not for the efforts of landowners, the State of Hawaii, The Peregrine Fund, the National and Hawaii Audubon Societies, The Nature Conservancy of Hawaii, Kamehameha Schools Bishop Estate, the National Biological Service, and the FWS working together to save the species.

Such cooperative efforts are not only heartwarming, but also absolutely crucial if we are to succeed in our goal of securing lasting protection for Pacific island ecosystems. Through our *ohana*, the next 20 years may move many of our native ecosystems much further along the road to recovery.

Barbara Maxfield is the public information specialist with the FWS Pacific Islands Ecoregion Office in Honolulu, Hawaii.

Hawaii's State bird, the nene or Hawaiian goose (*Branta sandvicensis*), is increasing in numbers, though its road to recovery is still a long one. Twenty

years ago, scientists assumed these birds preferred an upland habitat since remaining populations were found there. Nene have been managed at both Haleakala and Hawaii Volcanoes National Parks for many years in assumed "preferred" habitat. Recently, biologists found that nene really prefer lowland habitats and wetland areas, and will thrive in those areas once predators have been removed. In recognition of that fact, Hawaii's first State wildlife stamp, created by former FWS employee Patrick Ching, depicts nene at Hanalei NWR, a wetland refuge on the island of Kaua'i.
USFWS photo

New Hope for the Schaus Swallowtail

Listed 20 years ago as threatened, the Schaus swallowtail butterfly (*Papilio aristodemus ponceanus*) was among the first insects protected under the Endangered Species Act (ESA). It is also one of the rarest. Habitat loss brought this southern Florida subspecies to the brink of extinction in 1984, when it was reclassified to the more serious status of endangered. But a recent release of captive-bred butterflies into protected habitat provides hope that recovery of the Schaus swallowtail may be in sight.

On May 13, 1996, 248 female and 155 male butterflies were set free at 7 protected sites in southern Florida. All of the females were mated prior to the release. Biologists will monitor the populations over the next year to determine the success of the effort.

When William Schaus described this butterfly in 1911, it was distributed in tropical hardwood hammocks—slightly elevated sites covered with trees—from South Miami to Lower Matecumbe Key in the Florida Keys. Biologists believe that the butterfly's decline in numbers and range was due largely to habitat loss, aerial application of insecticides, and over-collecting. By the early 1980's, its range was reduced to a few islands in Biscayne National Park and scattered individuals on north Key Largo. Although Hurricane Andrew devastated the butterfly's stronghold—Biscayne National Park—in 1992, the population increased 2 years later to over 600.

The Florida Park Service and the FWS now protect much of northern Key Largo. Under the FWS Coastal

Ecosystem Restoration program, State and Federal biologists are planting hardwood hammock species to reconnect fragmented habitats for the butterfly and other listed species endemic to Key Largo. Aerial application of mosquito insecticide, which could harm the Schaus swallowtail, has been discontinued over these conservation lands in the last few years. Additionally, an agreement was reached with the Monroe County Mosquito Control District in early 1995 to discontinue ground spraying of mosquito insecticide in important Schaus swallowtail habitat during the butterfly's breeding season. In another significant action, the Florida Keys Electric Cooperative has agreed to enhance and preserve tropical hardwood hammocks important to Schaus swallowtail recovery within a 15-mile (24-kilometer) powerline easement on Key Largo.

With habitat protection in place, the focus of the recovery effort shifted to the butterfly itself. The FWS South Florida Ecosystem Office provided



funding to Dr. Thomas C. Emmel of the University of Florida at Gainesville to initiate a Schaus swallowtail captive breeding program, which became very successful. In April 1995, researchers released 760 captive-bred pupae at 6 publicly owned sites on Key Largo and 1 site in Miami, Florida. The purpose of these releases was to supplement the sparse numbers of individuals remaining on Key Largo and to reestablish the subspecies in the Miami area, where it was originally described. Later, biologists found adults, eggs, and larvae at all sites, confirming successful breeding of the released individuals. However, when poor weather forced a flock of neotropical migratory birds to spend extra time that year in the Key Largo hammocks, predation on the 760 released pupae was high. For this reason, the 1996 release consisted only of adults.

The continued cooperation of the University of Florida, Florida Department of Environmental Protection, Dade County Parks and Recreation Department, Florida Game and Fresh Water Fish Commission, Monroe County Mosquito Control District, Florida Keys Electric Cooperative, and the FWS will be instrumental for the recovery of the Schaus swallowtail in the wild. It now has protected habitat, a relatively pesticide-free environment, and a larger population in the wild. We hope future generations will be able to enjoy this beautiful butterfly gliding through the tropical forests of South Florida.

Mark Yanno is a biologist formerly with the FWS South Florida Ecosystem Office in Vero Beach, Florida.

Above

This beautiful, dark brown and yellow butterfly breeds once a year and emerges from its pupal form between late April and the end of June. Adults feed on the nectar of various plants and typically live only 3 or 4 days. Schaus swallowtails do not migrate as a group, although individuals will fly between islands. Natural predators include birds, spiders, and parasitic wasps.

Thomas C. Emmel

Working with States to Conserve Wetlands

West Indian manatees (*Trichechus manatus*), sea turtles, piping plovers (*Charadrius melodus*), and many more endangered and threatened species benefit from a program that helps States conserve important coastal wetlands. Since 1990, when Congress passed the Coastal Wetlands Planning, Protection and Restoration Act, the U.S. Fish and Wildlife Service (FWS) has been working with States to acquire, restore, manage, or enhance coastal wetlands through a competitive matching grants program. States bordering the Atlantic, Gulf, Pacific, and Great Lakes are eligible, as are Territories and Commonwealths of the United States.

Hawaiian moorhen
Robert J. Shallenberger/USFWS



States submit funding proposals to the FWS under the National Coastal Wetlands Conservation Grant Program. These proposals are reviewed and ranked by committees with representatives from different programs within the FWS. The law calls for projects to be given priority if they are:

- .* consistent with the criteria and considerations outlined in the National Wetlands Priority Conservation Plan;
- .* located in maritime forests on coastal barriers; or
- .* in States with dedicated funding for programs to acquire coastal areas, natural areas, and open spaces.

The FWS gives additional priority to projects that benefit species listed as endangered or threatened, encourage cooperative efforts, and further the goals of other ongoing projects.

A high proportion of projects funded by this grant program has some

connection with listed species because of the selection criteria and because wetlands are such valuable habitats for wildlife. The following examples illustrate what is being accomplished for coastal wetlands and the endangered species that depend on them.

Hamakua Wetlands, Hawaii

The Hamakua wetlands restoration project was completed in the spring of 1995. The project was designed to restore a 22.7-acre (9-hectare) wetland on the island of O'ahu that had been donated to the State by Ducks Unlimited. Ducks Unlimited had received the parcel as a donation from a private landowner, the Kaneohe Ranch. The wetland is connected to the Kawainui Marsh, which at 800 acres (325 ha) is the largest wetland in the Hawaiian Islands. An important goal of this project was to restore habitat to benefit four endangered birds—the Hawaiian stilt (*Himantopus mexicanus knudseni*), Hawaiian moorhen (*Gallinula chloropus*), Hawaiian coot

Hawaiian stilt
Robert J. Shallenberger/USFWS



(*Fulica americana alai*), and Hawaiian duck (*Anas wyvilliana*).

Critical to the restoration of the wetlands was removal of non-native plant and animal species. Once non-native plants like Indian fleabane and red mangrove were removed, native plants like akulikuli (*Sesuvium* sp.), water hyssop (*Bacopa* sp.), and knotgrass (*Paspalum* sp.) returned. These native plants provide an excellent environment for invertebrates, which in turn feed waterbirds. Volunteers are working to maintain the habitat improvements under the supervision of the Hawaii Division of Forestry and Wildlife.

Reducing threats posed by non-native animals was another part of the plan to restore habitat for Hawaiian birds. A perimeter fence now excludes exotic grazing animals, and a trapping program run by the State removes mongooses and feral cats from the wetlands.

The birds this restoration project was targeted to help are

using the wetlands now in greater numbers. Encouraging signs include a successful nesting of the Hawaiian moorhen and an attempted nesting by Hawaiian stilts. Migratory shorebirds and ducks are also making use of the improved habitat.

In addition to the direct benefits to wildlife, the Hamakua Wetlands project is important as a model for the multi-partner approach to wetlands conservation projects in Hawaii. Federal assistance encouraged this cooperative effort and now new restoration proposals will build on this project. Finally, its high profile within the city of Kailua in Honolulu County provides excellent environmental education opportunities.

Rookery Bay, Florida

The State of Florida received matching funds in 1992 to protect and enhance the Rookery Bay National Estuarine Research Reserve in south-eastern Florida. The goals of the Rookery Bay project were to acquire critical coastal barriers and wetlands adjacent to the existing reserve and to restore habitat that had been degraded by restriction of water flow, invasions of exotic plants, and fire suppression. The number of endangered and threatened species in the Rookery Bay Reserve area that could benefit from this project is impressive and includes: the West Indian manatee, Florida panther (*Felis concolor coryi*), loggerhead sea turtle (*Caretta caretta*), bald eagle (*Haliaeetus leucocephalus*), American crocodile (*Crocodylus acutus*), eastern indigo snake (*Drymarchon corais couperi*), and Florida scrub jay (*Aphelocoma coerulescens*). In addition, a number of State "species of special concern" are found at the site.

Approximately 300 acres (120 ha) of land were acquired, focusing on critical barrier islands, including Johnson, Sam Williams, and a large parcel on Little Marco Island. These islands harbor important natural communities of coastal hardwood hammocks, pine and oak assemblages, and fringing mangrove forests.

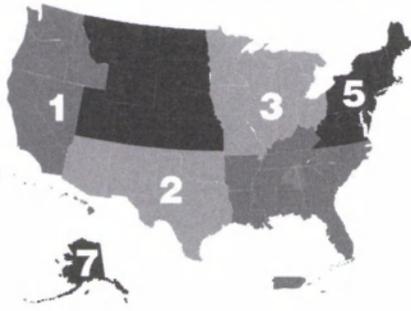
The grant-funded tasks were successfully completed in 1994, but the effort to restore the Rookery Bay Ecosystem is a continuing process. It is too early to evaluate fully the project's success, but some encouraging signs include increased loggerhead nesting activity on barrier islands where exotic vegetation was removed and reestablishment of a small breeding population of Florida scrub jays in areas burned to restore its open habitat.

Sally Valdes-Cogliano is a biologist with the FWS Division of Habitat Conservation in Washington, D.C.



Rookery Bay, Florida

photo courtesy of
Florida Department of
Environmental Protection



Region 2

Red-cockaded Woodpecker (*Picoides borealis*)

The Fish and Wildlife Service's (FWS) Ecological Services Field Office in Arlington, Texas, finalized a no-jeopardy biological opinion addressing anticipated impacts on the red-cockaded woodpecker from implementation of the Revised Land and Resource Management Plan of 1996 for National Forests and Grasslands in Texas. The revised plan incorporates a strategy to support the recovery this endangered species in Texas by providing a total of over 277,000 acres (112,100 hectares) of forest habitat on the Sam Houston, Davy Crockett, Angelina, and Sabine National Forests for woodpecker management. It promotes practices that will minimize habitat fragmentation, retain suitable numbers of potential cavity trees throughout the landscape, and restore much of the original forest cover to the degree possible by reestablishing the appropriate pine species. Stability and growth of small red-cockaded woodpecker populations will be aided by creating artificial nesting cavities and translocating juvenile woodpeckers.

The Texas Parks and Wildlife Department and the Texas Forest Service, in coordination with the FWS, have drafted a Habitat Conservation Plan (HCP) for the red-cockaded woodpecker in east Texas based on the "safe harbor" concept that encourages voluntary enhancement and restoration of endangered species habitat. Representatives from the U.S. Forest Service, Texas Forestry Association, International Paper, Louisiana Pacific, Temple Inland, Champion International, The Woodlands Corporation, Big Thicket National Preserve, Houston Audubon Society, and non-industrial private landowners are participating in developing the plan. Its purpose is to encourage land managers to restore and enhance nesting and foraging habitat for the wood-

pecker on privately owned and certain other lands in the Pineywoods Region of eastern Texas. The plan is designed to stop the long-term decline of the Pineywoods woodpecker population and to provide time for other conservation strategies to be tested or implemented, such as those proposed for National Forest Lands.

Mexican Spotted Owl (*Strix occidentalis lucida*)

In 1995, administrators with the FWS and Coconino National Forest began exploring ways to become more responsive to Mexican spotted owl and forest management issues in northern Arizona. As a result, the FWS transferred biologist Michele James to a sub-office located within offices of the Peaks Ranger District of the Coconino National Forest. With a biologist on site, the FWS hoped to work more closely with Forest Service personnel and with Navajo, Hopi, and Hualapai Tribal biologists to resolve Endangered Species Act consultation needs informally, and in the process to maximize Mexican spotted owl protection and compatible forest uses. One year later, this approach is working. When funds allow, the FWS will consider locating additional biologists at facilities of other agencies to increase responsiveness to endangered species needs in the field.

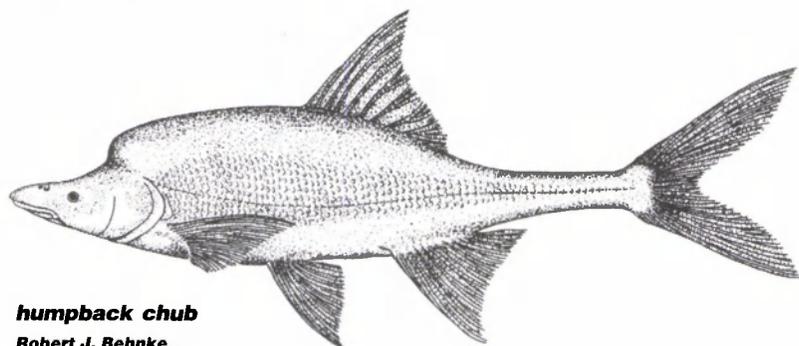
Colorado River Species The Lower Colorado River has been described by author Aubrey S. Johnson as a "thin green line surrounded by a world in which drought is the rule rather than the exception." The FWS has joined a regional partnership committed to working together, both fiscally and physically, to manage the river for the well-being of wildlife, plants, and people. Development of the Lower Colorado River Multi-Species Conservation Program is just beginning, but when complete it is expected to address 102 rare and endan-

gered species associated with wetland, riparian and upland habitats within the 100-year floodplain, while recognizing the demands placed on the system by an expanding human population.

Southwestern Birds Population and habitat viability assessment workshops have been conducted for three endangered birds of the southwest, and the workshop reports are now complete. The workshop on the masked bobwhite (*Colinus virginianus ridgwayi*) was organized by Bill Kuvlesky, a biologist at Buenos Aires National Wildlife Refuge in southern Arizona. Workshops on the golden-cheeked warbler (*Dendroica chrysoparia*) and black-capped vireo (*Vireo atricapillus*) were organized by Carol Beardmore, a biologist in the FWS Austin, Texas, Field Office. Participants in each workshop involved 20-35 specialists in bird biology, physiology, genetics, disease, small population modelling, captive propagation, and habitat management. The workshop reports identify strategies for recovering these endangered birds.

Region 3

Decurrent False Aster (*Boltonia decurrens*) Next fall, Missouri is expecting to see one of the largest populations of this threatened plant ever recorded in the State. From the number of seedlings found this spring, Dr. Marian Smith, an expert on the species, predicts there will be tens of thousands, or perhaps even hundreds of thousands, of plants this fall at one location in St. Charles County. Decurrent false aster, listed in 1988 as threatened, is a wet prairie perennial. The 1995 flood apparently produced perfect conditions for seedling establishment at this site.



humpback chub
Robert J. Behnke

BOX SCORE

Listings and Recovery Plans as of June 30, 1996

GROUP	ENDANGERED		THREATENED		TOTAL LISTINGS	SPECIES W/ PLANS
	U.S.	FOREIGN	U.S.	FOREIGN		
 MAMMALS	55	252	9	19	335	40
 BIRDS	74	178	16	6	274	73
 REPTILES	14	65	19	15	113	31
 AMPHIBIANS	7	8	6	1	22	11
 FISHES	65	11	40	0	116	72
 SNAILS	15	1	7	0	23	18
 CLAMS	51	2	6	0	59	42
 CRUSTACEANS	14	0	3	0	17	4
 INSECTS	20	4	9	0	33	20
 ARACHNIDS	5	0	0	0	5	4
ANIMAL SUBTOTAL	320	521	115	41	997	315
 FLOWERING PLANTS	403	1	92	0	496	270
 CONIFERS	2	0	0	2	4	1
 FERNS AND OTHERS	26	0	2	0	28	15
PLANT SUBTOTAL	431	1	94	2	528	286
GRAND TOTAL	751	522	209	43	1,525*	601**

TOTAL U.S. ENDANGERED: 751 (320 animals, 431 plants)

TOTAL U.S. THREATENED: 209 (115 animals, 94 plants)

TOTAL U.S. LISTED: 960 (431 animals, 525 plants)***

*Separate populations of species listed both as Endangered and Threatened are tallied twice. Those species are the argali, leopard, gray wolf, piping plover, roseate tern, chimpanzee, green sea turtle, saltwater/Nile crocodile, and olive ridley 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 424 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.

***Four animals have dual status.

ENDANGERED Species BULLETIN

*U.S. Department of the Interior
Fish and Wildlife Service
Washington, D.C. 20240*

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