

# ENDANGERED Species BULLETIN

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*Resource managers and the private sector have long faced the challenge of how to reconcile wildlife conservation with society's demand for economic development. In 1982, Congress provided a means in the Endangered Species Act by which both sides can meet this challenge. Known as the Habitat Conservation Plan, or simply the HCP, this approach provides opportunities to explore creative strategies for accommodating the needs of landowners, local communities, and wildlife.*

*The HCP approach has not evolved without difficulty and controversy, but HCPs are now recognized as an important tool for promoting both long-term habitat protection and compatible land uses. This edition of the Bulletin looks at the HCP experience from various perspectives.*

# U.S. Fish & Wildlife Service

Richard Hannan/FWS

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**On the Cover**  
 Habitat Conservation Plans are increasingly being used to maintain stands of mature forest in the Pacific Northwest that support a variety of species.

**cover photo by Philip Carroll**  
**left: FWS photo**

*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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# The HCP Approach

**This edition of the *Bulletin* takes an in-depth look at the HCP process. To gain a diversity of viewpoints, the *Bulletin* staff solicited articles from not only within the Fish and Wildlife Service but also the private sector, State and local governments, and conservation organizations. Articles from authors outside the FWS do not necessarily represent the views of this agency.**

Of the various protections granted to species listed under the Endangered Species Act (ESA), the prohibition against “take” is one of the most fundamental. The ESA defines take as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect” any species<sup>1</sup> federally listed as endangered or threatened. This definition includes, in certain cases, destruction or modification of endangered species habitat.

Until 1982, there was no mechanism under the ESA to permit the take of listed species that might occur *inadvertently* during development or other activities by private landowners. In that year, Congress amended section 10(a)(1)(B) of the ESA to allow issuance of “incidental take” permits authorizing take that “is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.” This change led to one of the most important and ambitious programs under the ESA—the habitat conservation planning process.

Of course, one cannot simply ask for and receive an incidental take permit. An applicant must first prepare and submit for approval a “conservation plan” detailing, among other things, what the effects of the taking on the species will be and how those effects will be mitigated. Now called Habitat Conservation Plans or simply “HCPs,” these plans are central to the entire section 10(a)(1)(B) process. Indeed, HCPs have come to symbolize a fundamental approach to resolving endangered species issues on non-Federal lands.

One of the keys to the HCP process is its flexibility. HCPs vary enormously in size and scope. To date, most of the completed HCPs have been for relatively small projects, but the number of regional-scale planning efforts is growing. Another key is creativity. The ESA and its regulations establish basic biological and procedural standards for the program but otherwise allow the creative potential of willing HCP participants to flourish.

The HCP process is far from perfect, but the benefits of a successful HCP effort far outweigh the costs, and the Fish and Wildlife Service is attempting to improve and streamline permit processing requirements. Non-Federal agencies and the private sector throughout the country are turning increasingly to the HCP process as a means of conserving endangered species habitat in their areas while meeting their growing social and economic needs.

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*Editor's note: The above was adapted from “Reconciling Conflicts Through Habitat Conservation Planning,” a longer feature article by William Lehman in the Endangered Species Bulletin, Vol. XX, No. 1.*

<sup>1</sup>For the purposes of this article, the term “species” will apply only to animals. The prohibitions in section 9 of the ESA applying to listed plants are limited to (1) the collection or malicious destruction of endangered plants on Federal land and (2) removal or damage to listed plants on private or State lands in knowing violation of State law, or in the course of violating a State criminal trespass law.



Richard Haman/FWS

by Craig Hansen

# Multi-Species Plan for Forest Habitat

**A multi-species HCP is a plan developed to minimize, and mitigate to the maximum extent practical, incidental take of all listed species that may occur in the plan area. The needs of all other species for which an applicant desires coverage—such as a State or Federal species of concern—also must be addressed as if they were listed. This can best be accomplished by ensuring that adequate amounts of all habitat types within the HCP area are maintained.**

On June 26, 1995, the Murray Pacific Corporation, a timber company based in Tacoma, Washington, signed a Habitat Conservation Plan (HCP) that may set a precedent for future large-scale species conservation agreements. This plan, the first multi-species HCP for a forested landscape, applies to all listed species that may occur on the company's land now and in the future. It is designed to protect vital habitat for these species while allowing continued timber harvest.

Under the terms of the HCP and its implementation agreement, Murray Pacific received an incidental take permit for currently listed species that may occur on its ownership for the next 100 years. The permit allows Murray Pacific to take listed species incidental to carrying out otherwise legal timber harvest activities. Additionally, the scope of the HCP is wide enough that, should any species occurring on Murray Pacific timberlands become listed in the future, the incidental take permit would be amended (at the company's request) to include the newly listed species. Thus, Murray Pacific has certainty that it can conduct timber harvest activities—as described in the HCP and the legally binding implementation agreement—for the next century without violating the ESA. This was the first such permit issued jointly by the Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) under section 10 of the Endangered Species Act (ESA).

The new HCP is actually an amendment to an HCP Murray Pacific com-

pleted in September 1993 to obtain an incidental take permit for the northern spotted owl (*Strix occidentalis caurina*). In order to conduct timber harvest activities around sites occupied by the owl, Murray Pacific created an HCP that, among other provisions, is designed to develop and maintain owl dispersal habitat across 43 percent of the 53,000-acre tree farm. This conservation strategy was consistent with the Northern Spotted Owl Draft Recovery Plan, which stressed the importance of dispersal habitat in this area to support owl nesting, roosting, and foraging habitat on adjacent National Forests.

As Murray Pacific completed action on the spotted owl HCP, the company learned that another bird dependent on mature forests, the marbled murrelet (*Brachyramphus marmoratus*), had been listed as threatened. Although subsequent surveys revealed no murrelets on company lands, Toby Murray, the company's vice-president, became concerned about the potential need for additional HCPs if other species on Murray Pacific lands were to



photos by Craig A. Hansen

**Murray Pacific has agreed to manage its holdings to provide habitat for juvenile and "floater" adult spotted owls. The company will use such silvicultural techniques as pre-commercial thinning and pruning to accelerate the growth of habitat characteristics needed by dispersing owls.**



**Washington State's Forest Practices Rules and Regulations require companies engaged in timber harvest to leave an average of two green recruitment trees and two snags per acre. When no snags are available, green trees will be substituted. Such trees may be left adjacent to riparian reserves, helping to create some interior forest.**

**The currently listed species that are covered by Murray Pacific's HCP and incidental take permit include four threatened animals—the owl, murrelet, bald eagle, and grizzly bear—and the endangered gray wolf. Many of the conservation measures specified in the agreement are predicated on the chance that these species may occur on Murray Pacific ownership at some time in the future. Although the parties involved in negotiating the HCP acknowledge that it could not be all things to all species, they agree that the plan and its implementation agreement provide the best conservation attainable given the habitat resources present and the fact that these forest lands are expected to realize some economic return.**

become listed in the future. His solution was to develop a multi-species HCP covering all listed species, and species that may be listed in the future, that occur on Murray Pacific timberlands. With this strategy, Murray Pacific could plan for the future and be assured of being able to continue its timber harvest activities without being unduly affected by the ESA.

Murray Pacific's HCP uses a multi-species habitat-based approach. The company anticipated that by retaining and enhancing the habitat types that occur in the HCP area, it can provide for some needs of all the species that occur or are likely to occur on its lands. In addition to the conditions of the original spotted owl HCP, which are still in place, Murray Pacific's multi-species HCP provides for leaving at least 10 percent of its tree farm in non-harvest reserves for the next 100 years. The reserves will take the form of riparian buffers averaging at least 100 feet on each side of all fish-bearing streams. Murray Pacific's commitment to perform watershed analysis on over 98 percent of the HCP area is an important part of the plan. Management prescriptions

resulting from this process will reduce erosion into fish streams and improve long-term conditions of riparian areas. This ensures that riparian ecosystems, which are areas that support the greatest species diversity and abundance, will be protected on Murray Pacific lands. Other provisions of the HCP ensure that all forest habitat types and age classes currently on the tree farm, as well as special habitat types such as talus slopes, caves, nest trees, and den sites, will be protected or enhanced. Murray Pacific will leave more snags and double the number of "green recruitment trees" (live trees left in place to provide seed and an uneven-growth forest structure in the future) per acre required by Washington Forest Practices Regulations.

In addition to the broad approach, Murray Pacific has addressed the specific habitat needs of species of concern. Some of these measures include protection of talus slopes and green recruitment trees to maintain environmental conditions required by the Larch Mountain salamander (*Plethodon larselli*), a species of concern; protecting snags occupied by



**Larch Mountain salamander**

**Bill Leonard**

Vaux's swift (*Chaetura vauxi*), a State candidate species, and leaving green recruitment trees around the snags where practical; protecting up to 5 cave openings occupied by indigenous bat species by retaining trees around each entrance; protection of bald eagle (*Haliaeetus leucocephalus*), osprey (*Pandion haliaetus*), and goshawk (*Accipiter gentilis*) nest trees; and seasonal protection of grizzly bear (*Ursus arctos*), gray wolf (*Canis lupus*), California wolverine (*Gulo gulo luteus*), and Pacific fisher (*Martes pennanti pacifica*) den sites, should they be found on Murray Pacific's ownership. Moreover, to minimize disturbance to all wildlife, the company limits access to the tree farm.

Murray Pacific's decision to engage in a multi-species HCP was voluntary, and was influenced by Interior Secretary Bruce Babbitt's "No Surprises" policy. This policy, issued in August 1994, states that once an HCP has been approved and is functioning as intended, the FWS (or NMFS) will not require the landowner to provide additional land or financial compensation in the future to mitigate unforeseen

circumstances. If mitigation measures beyond those specified in the HCP subsequently are deemed necessary, the primary obligation for such measures would rest with the agency, not the HCP permittee.

This certainty, also known as the "A Deal is a Deal" policy, is what makes HCPs inviting to landowners. They can conduct their normal activities according to the provisions of the HCP without having to be concerned about violating the ESA. At the same time, the landowners make a commitment to continue their conservation efforts throughout the life of the HCP, thereby contributing to the viability of ecosystems at the landscape level. As Toby Murray put it, "There is no doubt in my mind that we have done the right thing—the right thing for the Murray Pacific Corporation and the right thing for fish and wildlife."

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*Craig Hansen, a wildlife biologist with the FWS Olympia, Washington, Field Office, was the lead FWS representative on this HCP project.*

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**Amphibian surveys conducted in the Murray Pacific HCP area revealed the presence of the northern red-legged frog (*Rana aurora aurora*)—a candidate for listing under the Endangered Species Act—in several drainages. The habitat used by this frog is protected by the riparian and wetland buffers provided in the Murray Pacific HCP. Adult red-legged frogs are highly terrestrial and frequently are found in damp woodlands adjacent to streams. Breeding habitat includes marshes, ponds, and slow-moving streams.**



**red-legged frog**  
**Bill Leonard**

by John Wilkinson

# Good News for Owls and Jobs

In early 1995, Weyerhaeuser Company and the U.S. Fish and Wildlife Service (FWS) agreed to a Habitat Conservation Plan (HCP) to protect the threatened northern spotted owl (*Strix occidentalis caurina*) on the company's land near Coos Bay, Oregon. The HCP is a classic "win-win" situation for both owls and jobs by providing dispersal habitat for spotted owls while offering increased certainty for operations on the company's timberlands.

Below:

**Weyerhaeuser's Habitat Conservation Plan provides dispersal habitat for northern spotted owls on its managed forestland, such as this section in southwest Oregon.**



photo courtesy of Weyerhaeuser Company

Timber harvest operations on Weyerhaeuser's 209,000-acre (84,450-hectare) Millicoma Tree Farm provide 300 forest and sawmill jobs, plus additional jobs for local contractors, chips for papermaking operations, and logs for other local mills. Weyerhaeuser and other private landowners make long-term investments in each acre of timberland. The HCP not only reduces risks to these investments and the jobs associated with them, but also protects owls by providing dispersal habitat on Weyerhaeuser land located between two Federal Late Successional Reserve areas and a large block of State-owned forest located in southwest Oregon. Dispersal habitat allows for the movement of spotted owls between these areas and increases survival prospects for young birds by providing areas for foraging and protection from predators.

The HCP agreed upon by Weyerhaeuser and FWS is legally binding for a period of 50 years. After that, the government can renew the

plan in 10-year increments up to a total of 80 years. The Millicoma Tree Farm now contains portions of 35 owl site centers. Weyerhaeuser will protect all existing habitat around some of the most viable site centers, protect 70 acres (28 ha) around *all* owl site centers, and manage the entire tree farm to maintain suitable habitat for dispersal of spotted owls. Under the terms of the agreement, Weyerhaeuser will use three methods to maintain dispersal habitat for owls:

- ✦ Keep 40 percent or more of the tree farm in dispersal habitat, including roosting and foraging areas. Weyerhaeuser will develop this habitat by careful harvest planning and forestry techniques, such as thinning and fertilization.

- ✦ Limit the size of gaps between stands of dispersal habitat. Smaller gaps make it easier for owls to disperse safely. Weyerhaeuser will ensure that gaps on 80 percent of the tree farm will be one-half mile (0.8 km) or less in width. Ninety percent will have gaps of one mile (1.6 km) or less, and virtually all, or 99 percent, will have gaps of less than 3 miles (4.8 km).

- ✦ Retain some mature timber for at least 20 years and until dispersal habitat conditions are achieved. Weyerhaeuser will retain 1,592 acres (645 ha) of mature timber on the east and west sides of the tree farm, land that is now suitable for dispersal and roosting habitat. An additional 371 acres (150 ha) close to the boundary of the tree farm will assist four known nesting owl sites on neighboring Federal land.

While a win-win agreement was developed that benefits both species and jobs, Weyerhaeuser believes the permit process could be streamlined and improved as private landowners and the FWS complete additional plans

in order to reduce the amount of time and money required to complete HCPs.

Weyerhaeuser is taking the HCP a step further by developing multi-species conservation and management plans in southwest Washington and the Willamette area of western Oregon. These HCPs will address many wildlife species on Weyerhaeuser land in addition to the northern spotted owl. Weyerhaeuser's HCP for its Millicoma Tree Farm built a strong foundation for the development of additional, comprehensive conservation plans on the company's land and can serve as an example for other private landowners entering this process.

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*John Wilkinson is the Vice President, Oregon Timberlands for the Weyerhaeuser Company.*

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John & Karen Hollingsworth ©

**northern spotted owl**

# Placing a Bet on the Desert Tortoise

by Martha K. Collins

**Southern Nevada's Clark County is a land of stark contrasts. Part of the hot, dry Mojave Desert, it accommodates nearly 65 percent of Nevada's human population and is one of the fastest-growing counties in the United States. Between 1980 and 2020, the population is expected to triple, reaching 1.5 million. Urban development is concentrated in the Las Vegas Valley, which encompasses only 20 percent of the county but**

The slow-moving world of the desert tortoise (*Gopherus agassizii*) and the fast-paced world of Las Vegas headed for conflict in the 1980's as bulldozers and backhoes steadily extended suburbia into the scrubby habitat of the desert's original dwellers. This loss of habitat, combined with habitat damage from livestock overgrazing and off-highway vehicle (OHV) use, predation of juvenile tortoises by common ravens (*Corvus corax*), drought, the spread of an upper

tion of the desert tortoise (a designation for tortoises west and north of the Colorado River). This temporary measure was replaced with long-term protection when the Mojave population was listed as threatened.

Listing the tortoise under the ESA slowed the rapid commercial and residential development that had come to characterize the Las Vegas area. After developers failed to overturn the listing action in court, the Southern Nevada Homebuilders Association agreed to negotiate a solution. A steering committee comprised of representatives from Clark County; the cities of Mesquite, Las Vegas, North Las Vegas, Henderson, and Boulder City; rural Clark County communities; Nevada Department of Transportation; various Federal agencies; OHV user groups; the mining industry; desert tortoise biologists; The Nature Conservancy; and numerous interested individuals began working on a compromise.

Their efforts were successful, culminating in the approval of a 30-year habitat conservation plan (HCP) by the FWS and the Clark County, Nevada, Commissioners on July 18, 1995. The Clark County Desert Conservation Plan replaces a short-term HCP, issued in 1991 as an interim measure and amended in 1994, that allowed development of up to 30,352 acres (12,283 hectares) and the incidental take of 3,710 desert tortoises (see BULLETIN Vol. XVI, Nos. 9-12). The Clark County Desert Conservation Plan is not expected to have any significant negative economic impacts on Clark County, and



Martha K. Collins

**96 percent of the population. Las Vegas, Nevada's largest city, is known as an artificial oasis of casino gambling, neon lights, lavish landscaping, and extravagant floor shows. But the area is also the home of the desert tortoise, a reptile that has survived in the desert for millennia.**

respiratory tract disease in tortoises, and illegal collection contributed to the toll on tortoise populations, which declined by as much as 90 percent in some areas. In response, the Fish and Wildlife Service (FWS) took emergency action in 1989 to give Endangered Species Act (ESA) protection to the Mojave popula-

it ensures that development can continue while allowing the desert tortoise to recover.

Under the plan, Clark County and the cities of Las Vegas, North Las Vegas, Henderson, Boulder City, and Mesquite will be allowed to "take," incidental to otherwise legal development activities, desert tortoises that occur on 111,000 acres (44,920 ha) of non-Federal land in Clark County. In addition, the Nevada Department of Transportation will be allowed to take desert tortoises on up to 2,900 acres (1,170 ha) in Clark, Lincoln, Nye, Esmeralda, and Mineral Counties over the next 30 years. In return, recipients of incidental take permits will carry out measures designed to minimize, monitor, and mitigate the effects of this take and the associated loss of tortoise habitat. Recovery of the tortoise will occur mainly on federally-administered lands.

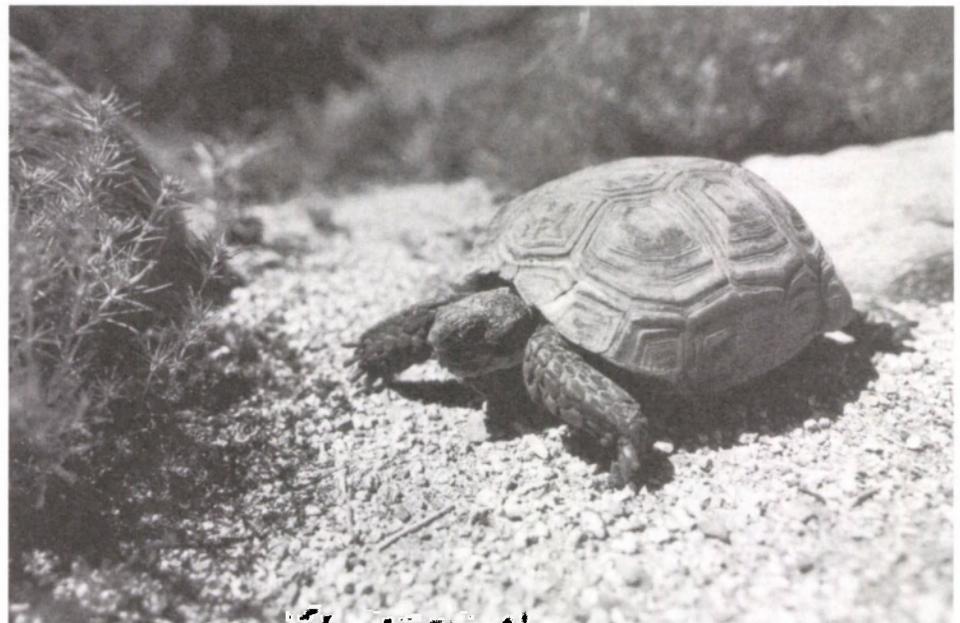
At least \$1.35 million per year, and up to \$1.65 million per year during the first 10 years, will be provided to fund these measures, which are intended to carry out tasks identified in the Desert Tortoise (Mojave Population) Recovery Plan for areas within Clark County. Funds will come from a mitigation fee of \$550 per acre (0.4 ha) assessed on development projects within the area covered by the new plan. Any funds provided to State and Federal resource agencies will augment, not replace, existing funds.

Activities to be carried out under the HCP include: (1) strengthening law enforcement; (2) constructing and maintaining tortoise barriers along roadways; (3) designating closed roads; (4) rehabilitating habitat; (5) conserving 85,000 acres (34,400 ha) of tortoise habitat on non-Federal land in Clark County; (6) maintaining grazing privileges acquired for conservation purposes in "non-use" status; (7) conducting research; (8) providing a free county-wide pick up and collection

service for desert tortoises found in harm's way; and (9) implementing a public information program.

Although the Clark County Desert Conservation Plan replaces the short-term HCP, certain measures initiated under the previous plan will proceed. Primary among these is establishment of the 540,000-acre (218,540 ha) Piute-Eldorado Desert Wildlife Management Area for habitat conservation. Measures designed to benefit the tortoise include: (1) maintenance of grazing allotments in "non-use" status; (2) restrictions on competitive and commercial OHV events; (3) road closures where appropriate and rehabilitation of previously-disturbed habitat; (4) limitations on intensive recreational uses; (5) review of mining claims and operations under section 7 of the ESA; (6) limitations on landfills to existing

**Desert tortoises generally are active in the spring, early summer, and autumn months, when the annual plants upon which they feed are most common. At other times, tortoises usually take refuge in shelter sites or burrows to escape the harsh desert weather, regulate body temperature, conserve water, and escape predators.**



**B. "Moose" Peterson/WRP**

sites; and (7) restrictions on existing uses that adversely impact tortoises. The area remains open to uses that do not jeopardize the tortoise.

*Martha Collins is a wildlife biologist in the FWS Las Vegas Field Office.*

**Clark County has proposed to contract with the National Biological Service to develop a translocation and sanctuary program for displaced tortoises. Such tortoises cannot be released at random because of the risk that they would infect resident, healthy tortoises with upper respiratory tract disease.**

# A State Perspective

by Ron Rempel

**The Metropolitan Bakersfield HCP broke new ground by providing assurances about a variety of listed and non-listed plants and animals occurring in several distinct habitat types. The species covered by the HCP include the federally-listed San Joaquin kit fox (*Vulpes macrotis mutica*), blunt-nosed leopard lizard (*Gambelia sila*), Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*), Bakersfield cactus (*Opuntia treleasei*), and giant kangaroo rat (*Dipodomys ingens*), along with other rare species like Tulare pseudobahia (*Pseudobahia peirsonii*), striped adobe lily (*Fritillaria striata*), Bakersfield saltbush (*Atriplex tularensis*), California jewel flower (*Caulanthus californicus*), and San Joaquin antelope ground squirrel (*Ammospermophilus nelsoni*).**

Right

**San Joaquin antelope ground squirrel**

Page 3

**California jewel flower**

In California, urban development pressures were at extreme levels in the 1980's and early 1990's, and proposed new development collided head on with new listings under the State and Federal Endangered Species Acts (ESA). Out of this conflict came the first Habitat Conservation Plan (HCP). The San Bruno Mountain HCP was designed to conserve a portion of the remaining range for several endangered butterfly taxa while allowing development on parts of San Bruno Mountain in San Mateo County, California. Following the enactment of the 1982 Federal ESA amendments, which authorized incidental take permits under section 10(a)(1)(B), the FWS issued the San Bruno Mountain permit, the first incidental take permit ever issued. The San Bruno Mountain HCP soon became the template handed out to anyone proposing to develop an HCP. Beginning with the San Bruno Mountain HCP, the California Department of Fish and Game (CDFG) has been a strong supporter of the HCP process, and has worked with the U.S. Fish and Wildlife Service (FWS) to encourage and facilitate the development of increasingly complex HCPs. Stimulated by the success of the San Bruno Mountain HCP process, HCP efforts were started by private landowners, cities, and counties at numerous locations in California. State and Federal permits for the incidental take of listed species were soon issued after completion of the Delano Prison, Texaco Cogeneration, Riverside County, Coachella Valley, and other California HCPs. Like the San Bruno Mountain prototype, all of these HCPs focused on single species or a small suite of closely associated species.

With additional species listings on the horizon, landowners, cities, and counties who were preparing HCPs began demanding greater assurances that new listings would not halt development and require additional mitigation after the 10(a) permit was issued. The concern about possible effects of future listings resulted in the development of a multiple-species, multiple-habitats HCP for a 408 square mile (157 square kilometer) area around the City of Bakersfield in the southern San Joaquin Valley of California. The key elements of this first multiple-species HCP are:

- collection of developer fees to help pay for plan implementation;



B. "Moose" Peterson/WRP®

- 
- ☛ acquisition of 1 acre (0.4 ha) of natural land for each acre developed;
  - ☛ providing an endowment for management of the conserved land;
  - ☛ funding for enhancement of conserved lands;
  - ☛ elimination of project-by-project review by CDFG and FWS; and
  - ☛ conservation of the Kern River corridor to provide the only remaining habitat linkage across the San Joaquin Valley.

Over the life of the Metropolitan Bakersfield 10(a) permit, it is anticipated that 45,000 acres (18,183 ha) of habitat will be permanently protected.

In 1991, California took the HCP concept one step further and initiated the Natural Community Conservation Planning (NCCP) program. The coastal sage scrub vegetation community in southern California was selected as the pilot program area. CDFG and the FWS work with the cities and counties in the 6,000 square mile (15,544 square km) planning area to develop Natural Community Conservation Plans which meet both the State NCCP and ESA 10(a) permit standards. Developing dual-purpose plans reinforces the partnership between the CDFG and FWS to conserve listed and non-listed species within the planning area, and it clearly demonstrates to the public, local agencies, and landowners that State and Federal agencies can work together to find solutions to natural resource issues.

The wide variety of HCPs and NCCPs now under development in California has challenged CDFG and FWS abilities to deal with an ever-changing social, political, and economic environment, and has resulted in new perspectives on the role of State and Federal agencies in conservation planning. One lesson is that developing a successful HCP must be a collaborative process that results in a plan that is 1) biologically defensible, 2) economically feasible, and 3) politically acceptable.

Only when all three factors are correctly balanced will an HCP or NCCP be adopted by a city or county, funded by the public, and supported by the environmental community. Making the HCP process work in California has required that CDFG and FWS:

- ☛ actively encourage development of regional, multiple-habitat HCPs;
- ☛ work to get all potential stakeholders involved in the process;
- ☛ acknowledge that ESA 10(a) permit holders need long-term assurance about their obligations and protections under the permit;
- ☛ leave hidden agendas at home; and
- ☛ expedite review and decision-making processes.

The HCP concept has greatly expanded from its origin with the San Bruno Mountain HCP. With innovative participants representing a wide variety of interests, collaborative HCPs will continue to evolve to meet future conservation challenges.

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*Ron Rempel currently serves as Program Manager for Natural Community Conservation Planning efforts with the California Department of Fish and Game.*

by Brian Loew

# County Shares HCP Experiences

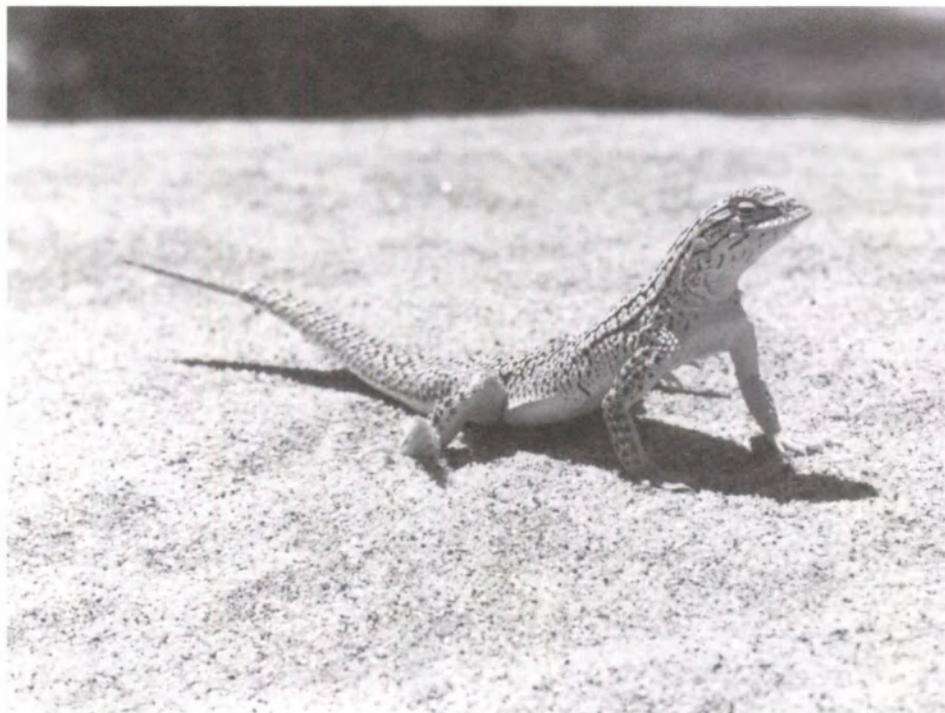
**The Habitat Conservation Plan (HCP) has been hailed as an optimal mechanism for reconciling conflicts between economic development and the preservation of wildlife habitat. It has been shown that through the development of HCPs, property owners, local governments, farmers, builders, environmental organizations, and the U.S. Fish and Wildlife Service (FWS) can work cooperatively to satisfy both the requirements of the Endangered Species Act (ESA) and the needs of local residents.**

Through its development and implementation of one single-species and two multi-species Habitat Conservation Plans (HCPs), Riverside County, California, has demonstrated the problem-solving capabilities and potential successes of these conservation plans. It has also, however, implemented another single-species HCP that illustrates some of the difficulties confronting the HCP process.

## **Coachella Valley Fringe-Toed Lizard HCP**

The Riverside County experience with regional HCPs began in 1984 following the listing of the Coachella Valley fringe-toed lizard (*Uma inornata*) as a threatened species. In an effort to address resulting restrictions on development and agriculture in the Coachella Valley region, a steering committee was formed to develop one

of the nation's first HCPs. That committee included representatives of the FWS, U.S. Bureau of Land Management (BLM), California Department of Fish and Game, County of Riverside, Coachella Valley Association of Governments, The Nature Conservancy (TNC), Agua Caliente Tribe, Coachella Valley Water District, and others. At the beginning of 1986, the HCP covering a 70,000-acre (28,285-hectare) area was



B. "Moose" Peterson/WRP

approved by the FWS, and an incidental take permit was issued to the County of Riverside and nine cities pursuant to section 10(a) of the ESA. The Fringe-Toed Lizard HCP is intended to conserve not only the sandy habitat used by this species, but also the essential sources of that wind blown sand. Using guidance provided in the species' recovery plan, three areas encompassing approximately 16,730 acres (6,760 ha) were designated as reserves. The \$10 million in local funding for implementing the plan came from mitigation fees assessed on private development in the HCP area.

### **Southwestern Riverside County Multi-Species HCP**

In 1992, the Metropolitan Water District of Southern California (MWD) and the Riverside County Habitat Conservation Agency (HCA) received State and Federal approval for their joint Southwestern Riverside County Multiple Species Habitat Conservation Plan. The Riverside County HCA is a public agency comprised of the County of Riverside and the Cities of Corona, Hemet, Lake Elsinore, Moreno Valley, Murrieta, Perris, Riverside, and Temecula. It was formed for the purpose of developing and implementing HCPs for the Stephens' kangaroo rat and other endangered, threatened, and candidate species in western Riverside County.

This 20,000-acre (8,081-ha) conservation plan covers 31 listed and sensitive species and numerous habitat types. Management activities are directed by a committee comprised of representatives of the Metropolitan Water District, Riverside County HCA, FWS, California Department of Fish and Game, and the Riverside County Regional Park and Open Space District.

Although only 3 years old, the Multiple Species HCP has proven to be a model approach for resolving potential conflicts between multiple species habitat conservation and the construction of the Domenigoni Reservoir, one

of the largest public works projects ever initiated in Southern California. Implementation of the HCP also has demonstrated that habitat management can be successfully accomplished through the mutual cooperation of local, regional, State, and Federal agencies.

### **Lake Mathews Multi-Species HCP**

The Metropolitan Water District and Riverside County HCA have completed a multiple species HCP covering 35 listed and sensitive species located on over 12,000 acres (4,848 ha) in western Riverside County. The Lake Mathews Multiple Species HCP seeks issuance of incidental take permits for listed species and pre-listing agreements for species not yet protected under the ESA. Additionally, it provides for the establishment of a multi-species mitigation bank and includes a highly innovative fire management plan developed in consultation with the California Department of Forestry and Fire Protection.

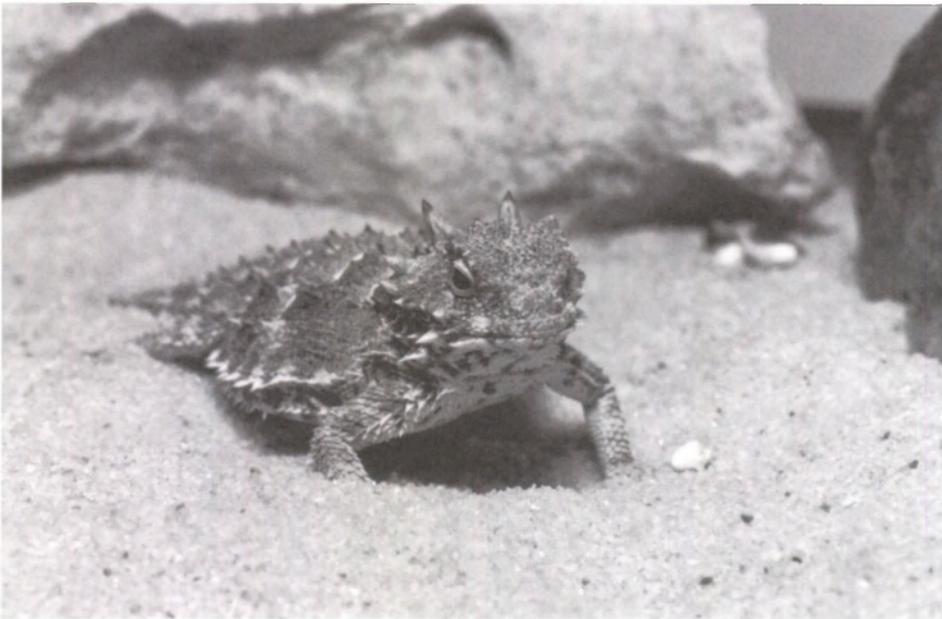
No land acquisition expenses will be incurred under this HCP due to the fact that included Metropolitan Water District, BLM, and State of California properties were already owned by those entities, while Riverside County HCA lands were acquired under the Stephens' Kangaroo Rat HCP (see below). The Riverside County HCA will provide a \$5 million endowment to finance ongoing management, monitoring, and biological research expenses. Habitat management will be provided by a non-profit organization acting under the direction of a committee comprised of county, State, and Federal representatives. Riverside County hopes to have State and Federal approval of the Lake Mathews Multiple Species HCP in the near future.

### **Stephens' Kangaroo Rat HCP**

The most significant and controversial HCP effort undertaken in Riverside County occurred as a result of the 1988 listing of the Stephens' kangaroo rat (*Dipodomys stephensi*) as an endan-

*Opposite page*

**This small lizard is found only within Coachella Valley in Riverside County, California. Named for its home and the tiny projections on its toes that enable it to run easily over sand, the Coachella Valley fringe-toed lizard evades predators by "swimming" beneath the loose surface. The presence of wind-blown sand is essential to the lizard's survival.**



gered species. At the time of the listing, Riverside was the fastest growing county in California, with residential and commercial development accounting for a significant proportion of the total economic activity in the western part of the county. Since that area also contains most of the species' remaining range, habitat protection came into conflict with public and private development in the region.

In August of 1990, the Riverside County HCA received State and Federal approval for a Short-Term HCP. That 565,000-acre (228,300-ha) conservation plan was intended to allow limited incidental take of the species during otherwise legal development activities and afford interim protection to the most valuable remaining habitat while sufficient data could be collected to design a permanent preserve system. However, because of continuing regulations on development within preserve study areas, a lack of Federal funding for implementation of the plan, and the absence of a recovery plan, there was considerable opposition from property owners.

The Riverside County HCA developed a Long-Term Stephens' Kangaroo Rat HCP intended to replace the Short-Term plan and submitted it for State and Federal approval in February 1995. Salient features of the Long-Term HCP include the following:

- Seven core preserves permanently dedicated to conservation of the Stephens' kangaroo rat and other species would be established throughout western Riverside County, by purchase and BLM land trades.

- Management of the core reserves would be coordinated by a committee consisting of the FWS, California Department of Fish and Game, BLM, Riverside County HCA, University of California at Riverside, Riverside County Regional Open Space and Parks District, TNC, Metropolitan Water District, and others.



photos courtesy of B. "Moose" Peterson/WRP

Within the HCP area, incidental take of the Stephens' Kangaroo rat may occur anywhere outside of core reserves with payment of the applicable mitigation fee (\$1,950 per acre). Incidental take in core reserves may occur for purposes related to public health, safety, and welfare (e.g., fire prevention, emergency response, and operation and maintenance of public facilities) with FWS approval.

The Riverside County HCA and the FWS recently completed public hearings on the joint environmental impact studies for the Long-Term HCP. Given the degree of public opposition expressed at those hearings, the future of this conservation effort is uncertain.

### Conclusion

Having developed and implemented a number of large-scale HCPs, Riverside County has drawn conclusions about factors necessary for their success:

In most cases, multiple-species HCPs are preferable to single-species HCPs. In areas such as Riverside County with 58 species currently listed or proposed for listing under the ESA, single-species HCPs only address a fraction of the total habitat issue.

In areas having any significant amount of private property, landowners must be involved from the beginning of the HCP development process.

Active participation by the FWS, BLM, and other Federal and State agencies is essential to the success of large-scale HCPs.

Funding of HCPs must be shared by Federal, State, and local sources and should not be funded solely by new development or any other single portion of the population.

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*Brian Loew is Executive Director of the Riverside County Habitat Conservation Agency.*



*Photos clockwise from top of opposite page*  
**San Diego horned lizard, San Diego black-tailed jackrabbit, loggerhead shrike, and southwestern pond turtle. These animals are among the 31 listed and sensitive species covered in the Southwestern Riverside County Multiple Species HCP. All but the turtle also are addressed in the Lake Mathews Multiple Species Habitat Conservation Plan.**



# Red Hills Salamander HCP

by Linda LaClaire

**Red Hills salamanders live within small burrows in sandy loam over and around siltstone outcrops on steep, shady ravines and bluffsides that are dominated by mixed pine and hardwood trees. The forest floor is moist and relatively cool, with an abundance of the small invertebrates that make up the salamander's diet. Its burrow invariably extends into siltstone, a soft rock that absorbs and retains moisture. The siltstone maintains a relatively stable, humid environment that probably allows the Red Hills salamander to survive periods of drought. This species spends so little time above ground that most researchers who have worked with the elusive salamander have never found one outside of its burrow.**

In 1960, a biologist walking along a steep, moist ravine shaded by beeches, tulip trees, oaks, big-leaf magnolias, and flowering dogwoods discovered a salamander new to science. Surveys for this species, designated the Red Hills salamander (*Phaeognathus hubrichti*), have demonstrated that it is unique to Alabama, where it is confined to a small area of the Red Hills Physiographic Province within the Tallahatta and Hatchetigbee geologic formations. In 1976, after the salamander's already limited habitat was reduced by intensive logging and the replacement of hardwood forests with pine plantations, the species was listed as threatened. Today, recovery of the Red Hills salamander is being promoted through a Habitat Conservation Plan (HCP) developed by International Paper Timberlands Operating Company, Ltd. (International Paper) and the Fish and Wildlife Service (FWS). Under this plan, about 6,400 acres (2,590 hectares) that include the best salamander habitat on International Paper lands will be conserved.

The Red Hills Salamander HCP provides for long-term conservation of the salamander on International Paper lands while permitting limited take of the species during otherwise legal activities. The incidental take permit, issued for a period of 30 years, applies to International Paper lands in Conecuh and Monroe Counties of south-central Alabama, where the company owns 29,463 acres (11,924 ha) within the Red Hills salamander's historic range. Of

this acreage, only around 6,400 acres (2,590 ha) are currently occupied by the salamander, but this represents 12 percent of the species' total range.

The two best habitat classifications ("optimal" and "suitable but suboptimal") apply to 4,514 acres (1,827 ha), or about 92 percent of the occupied Red Hills salamander sites observed on International Paper lands. To minimize and mitigate the take of Red Hills salamanders, these high quality habitats

are designated as refugia under the HCP. They are surrounded by 50-foot (15.2-meter) forested buffers, which total an additional 1,900 acres (769 ha). Limited timber practices can continue in the buffers, but at least 50 percent canopy cover will be retained. The buffers should reduce soil disturbance and desiccation, and protect the habitat quality of the refugia. In addition, International Paper will train employees to identify salamander habitat, establish buffers, and conduct timber activities within buffer zones in compliance with the terms of the HCP. Normal forest management practices can proceed in the marginally suitable habitat, which represents the balance (8 percent) of occupied range on International Paper land. Incidental take of the salamander is permitted only in the marginally suitable habitat.

The success of the Red Hills salamander HCP has led International Paper to begin development of an HCP to promote the recovery of the gopher tortoise (*Gopherus polyphemus*), which is listed as threatened west of the Mobile and Tombigbee Rivers. Such a

plan has the potential to be wide in scope, covering parts of Mississippi, Louisiana, and Alabama. It could provide the lead for additional HCPs covering the tortoise on other private lands.

In the South, 90 percent of timber land is privately owned. Fortunately, in developing this HCP, International Paper had the foresight to appreciate that the survival of many species depends on the stewardship of these private lands. "We view these projects as examples of private industry and government agencies developing creative solutions to natural resource issues," said Mark Suwyn, International Paper's Executive Vice-President, as he announced the plan. Other timber companies in the region now are following International Paper's lead, conducting surveys for the salamander on their lands and initiating discussions with the FWS on development of their own HCPs.

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*Linda LaClaire is a biologist in the FWS Jackson, Mississippi, Field Office.*



C. Kenneth Dodd, Jr.

**The Red Hills salamander is a dark brown, fairly large salamander, approximately 10 inches (25 centimeters) in length with an elongate body, short limbs, and a prehensile tail. The sole member of its genus, this salamander has no close biological relatives.**

# Negotiating for Conservation

*H*abitat conservation plans (HCPs) can be an effective tool for implementing the Endangered Species Act (ESA). Properly designed HCPs contribute to the conservation of wildlife while providing private landowners with reasonable use of their property. However, without a solid scientific foundation, long-term monitoring, and responsiveness to changing conditions, they provide only a false sense of security.

Two agencies, the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS), are responsible for negotiating HCPs on behalf of the public. Threatened and endangered species are public resources. It is incumbent upon the FWS and NMFS to assure that species identified in an HCP are protected sufficiently, and that such a determination is supported by sound scientific analysis. Furthermore, long-term monitoring and enforcement are necessary to assure that objectives of the plan are being met.

## **Ecosystem Approach**

Some multi-species HCPs have attempted to be ecosystem-based, protecting habitat across broad areas rather than limiting protection to known occupied sites. Although individual plants or animals might be lost under this approach, it avoids the problem of habitat slowly being whittled to nothing as development occurs on temporarily unoccupied habitat. A successful ecosystem approach to an HCP requires cooperation with private landowners

whose holdings lie within the ecosystem. In the Pacific northwest, for example, recovery of several late-successional forest species, such as the threatened northern spotted owl (*Strix occidentalis caurina*), cannot be achieved on national forest lands alone. Adequate reserves on intermingled non-Federal lands are necessary. These can be located along riparian zones where they also benefit salmon and other aquatic species.

## **Certainty and Flexibility**

As with any contract, a certain level of certainty and risk are inherent in the HCP process. Parties must realize that a degree of flexibility will be necessary to meet unanticipated situations. For instance, the HCP should anticipate significant habitat or population changes due to major storms, fires, or epidemics. This is especially true for multi-species HCPs that apply to nonlisted species, poorly understood invertebrates, or other less "charismatic" fauna.

A dollar paid today is worth far more than a promise to pay a dollar in 50 years. For wildlife, an acre of habitat

today is worth far more than the promise of an acre of habitat in 50 years. If the objectives of a plan are based significantly on the promise of future habitat development, perhaps a larger "down payment" of habitat preservation should be required. Under several HCPs, for example, late-successional forests will be logged during early years of the plan, resulting in a loss of important habitat. The results of mitigation actions (regrowth of other forest) might not be fully effective for nearly a century. The possibility that a population decline for the species in the early decades of the HCP might not be reversible in the later decades should be considered.

Most HCPs have no specific financial penalties, short of court action, for non-compliance. Since the recovery of damaged habitat may take decades or centuries, additional provisions for rectifying this are needed. For instance, a bond could be used to acquire replacement habitat.

### **Public Involvement**

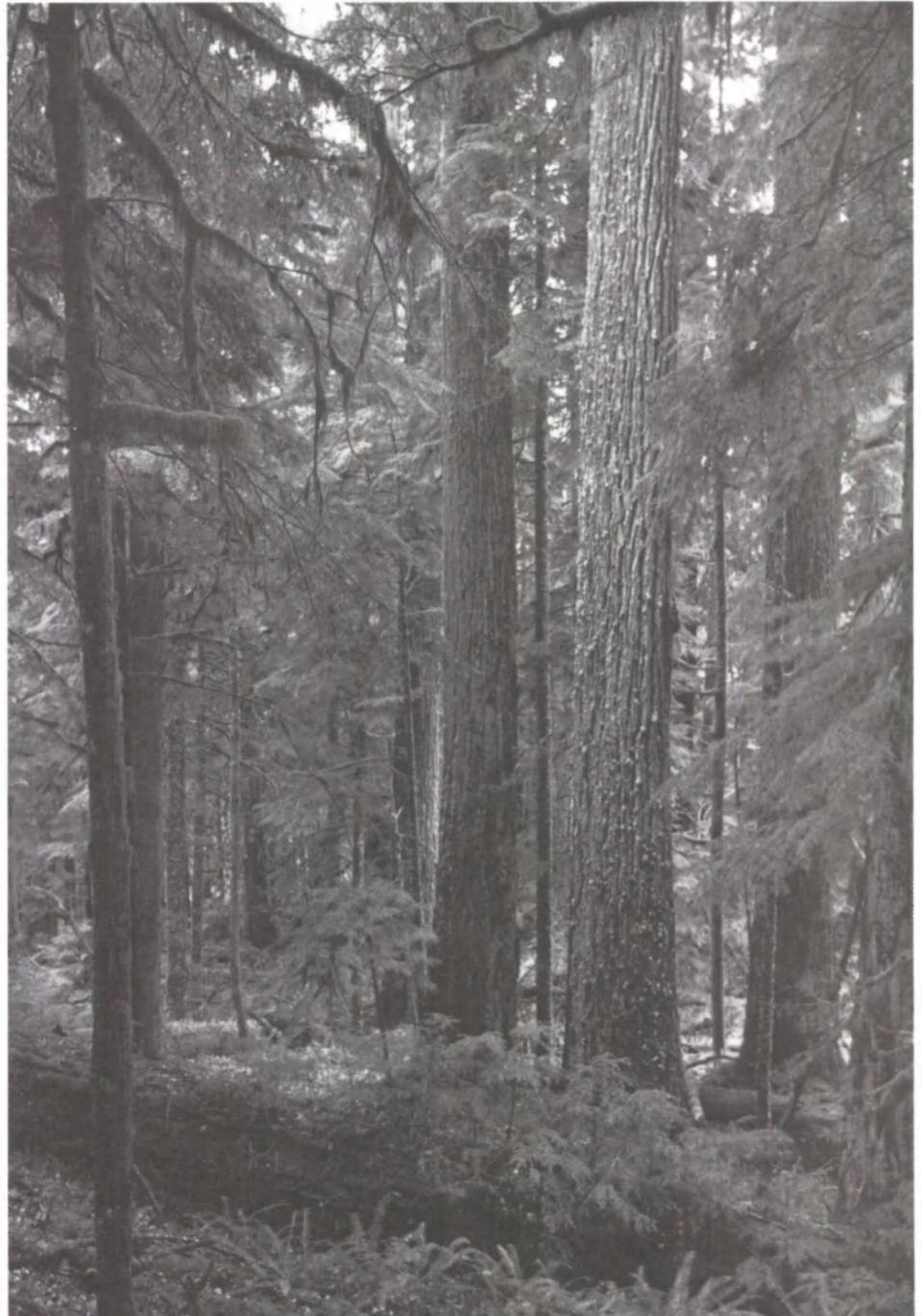
The National Environmental Policy Act (NEPA) is a part of the decisionmaking process, requiring preparation and public review of an environmental impact statement (EIS) for any action likely to affect the environment. While eliminating duplication between the EIS and HCP processes would benefit the reviewer and reduce costs, these are two separate processes with different purposes. Considering alternative habitat conservation approaches, assessing cumulative effects, and soliciting public input via an EIS are essential to achieving a sound HCP. While landowners may feel the process is complete with the agreement on a draft plan, the public review process—integral to agency decisionmaking—has just begun.

While an HCP is usually better than no plan, the real test is whether it complies with the ESA and ultimately

whether it contributes to the conservation of wildlife resources. We must exercise caution when entering into these long-term commitments.

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*A biologist, Mr. Raines has been active in forest issues for 25 years. He currently directs the Sierra Club's Cascade Checkerboard Project in Washington State.*



USDA Forest Service

**This late successional forest is an example of habitats covered by recent HCPs in the Pacific Northwest.**

# Keystone Dialogue on Private Lands

*T*he pace of the Endangered Species Act (ESA) reauthorization process has accelerated in recent months, with Congressional hearings underway, a range of reauthorization bills being introduced in the House and Senate, and debate continuing on how best to protect endangered species. Nothing in this debate seems to generate as much passion as the issue of private property rights and effects of the ESA on private landowners. At the same time, the contributions that private landowners make to conserving threatened and endangered species are receiving increased attention.

In the midst of all this, a quiet revolution of sorts took place last June and July when an unlikely group of individuals gathered in Washington, D.C., to discuss this critical issue of private lands and succeeded in an impressive achievement.

Increasingly, thoughtful people on all sides of the endangered species debate recognize that the ESA can generate considerable disincentives for private landowners to accept endangered species living on their lands. Landowners may enjoy endangered species and want them protected, but also fear that Federal regulations protecting imperiled species may limit use of their lands and may reduce property values.

This was the problem confronted by the group convened by the Keystone Center, a non-profit organization based in Keystone, Colorado, specializing in conflict resolution and facilitation of solutions to public policy issues. The subject of this "Dialogue" was as

practical as it was potentially divisive: how to increase incentives under the ESA for private landowners to protect endangered species.

What made the Keystone Dialogue so remarkable was that it brought together all the partisans in the endangered species debate, sat them down in a room, and told them, in essence, "We're going to develop conceptual solutions to this problem, we're going to try to reach consensus, and we're going to do it all in 4 days." One might well have asked whether someone had taken leave of their senses!

Thirty-two representatives from the Georgia-Pacific Corporation; Defenders of Wildlife; National Woodland Owners Association; Environmental Defense Fund; National Endangered Species Act Reform Coalition; National Wildlife Federation; International Paper; mining, farm, and real estate interests; Congressional staff; the Departments of Interior and Agriculture; State conservation

agencies; the U.S. Fish and Wildlife Service; and other organizations participated in both of the 2-day Dialogue sessions.

Three ground rules were established by Keystone at the outset of the Dialogue: (1) members of the group participated as individuals, not as formal representatives of their organizations; (2) all conversations were off-the-record and not for attribution; and (3) the final product would have the consensus of the *entire* group.

These rules laid the groundwork for a frank and productive discussion. Each participant had the power to veto any particular proposal, yet there was little stone-walling or political posturing. Each side could concede legitimate complaints by the other without losing respect among its constituency. All sides were highly motivated—not only by the desire to defend the interests of their constituencies, but by the understanding that to do so would require balancing the interests of each constituency. Another crucial reason for the Dialogue's success was the professional management of the group by the Keystone Center's staff

Happily, the ambitious goals of the Keystone Dialogue were achieved. The resulting July 25, 1995, report—"The Keystone Dialogue on Incentives for Private Landowners to Protect Endangered Species"—was forwarded immediately to Congress for its consideration during ESA reauthorization proceedings. It contains recommendations arranged in three chapters.

Chapter 1 addresses ways to increase voluntary participation in endangered species programs, including codification of the "Safe Harbor" policy (see *Endangered Species Bulletin*, Vol. XX, No. 3) into law; development of conservation agreements that would give landowners long-term regulatory certainty; and a Conservation Reserve Program, based on an existing program for farmlands, that would pay landowners a per-acre fee for protecting

endangered species habitat. Chapter 2, which is devoted to Habitat Conservation Plans, recommends reforms to encourage and streamline HCP development. Such recommendations include allowing "short-form" HCPs for small projects, development of "seed money" funds to help communities begin HCP efforts, and codifying Secretary Babbitt's August 11, 1995, "No Surprises" policy for HCPs (ensuring landowners that no additional money-based or land-based mitigation will be required of any approved and functioning HCP). Chapter 3 deals with financial incentives, including estate tax reform, Federal tax credits, and other tax-based incentives that would reward landowners who manage their lands in a manner that benefits endangered species.

Since its release, the Keystone report has received a lot of favorable attention. Members of Congress have declared themselves impressed and are studying its recommendations. Newspapers and magazines have published reports of the Dialogue, and its no-nonsense conclusions are proving a welcome addition to the ESA reauthorization debate. Yet there were equally important, if somewhat intangible, benefits—lessons, call them—that emerged from this 4-day exercise. This participant learned, for example, that the gulf between private property owners and endangered species advocates is *not* unbridgeable, that it is difficult to demonize the opposition when they're sitting next to you munching a croissant, and that political and ideological rhetoric occasionally does give way to productive discourse.

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*William Lehman is a wildlife biologist in the FWS Division of Endangered Species, Washington, D.C.*

***For a copy of the report summarized in this article, write the Keystone Center, P.O. Box 8606, Keystone, Colorado 80435-7998, or call 303/468-5822.***

## Region 2

**Santa Cruz River Species** The Cottonwood Springs Partners for Wildlife project, located in southern Arizona on Sonoita Creek (a major tributary of the Santa Cruz River), continues to serve as an excellent opportunity for biodiversity restoration. This effort has improved habitat for an endangered fish, the Gila topminnow (*Poeciliopsis occidentalis*), and the Huachuca water umbel (*Lilaeopsis schaffneriana* var. *recirva*), a plant proposed in 1995 for listing as endangered. Both species are found in cienegas, unique wetland ecosystems in the arid southwest.

Of additional and perhaps greater significance for biodiversity restoration, this partnership with a willing landowner has led to significant increases in the growth of willows, cottonwoods, and other species. The growth of these native trees, when combined with recovery of other cienega and riparian plants, has increased the area's diversity of neotropical migratory bird species, such as flycatchers, vireos, warblers, and grosbeaks.

The Fish and Wildlife Service's (FWS) Arizona Ecological Services State Office hopes to use this Partners for Wildlife partnership and others nearby as examples to promote similar restoration efforts along the Santa Cruz River in Mexico.

## Region 3

### Running Buffalo Clover (*Trifolium stoloniferum*)

In early June, a new site for this endangered plant was confirmed in Lawrence County, Ohio. Botanists from the Ohio Department of Transportation, the Ohio Division of Natural Areas and Preserves, and the U.S. Forest Service verified the clover find.

**Dakota Skipper (*Hesperia dactotae*)** Federal agriculture and natural resource agencies, species experts, and private agriculture interests met in late June to launch a prelisting recovery effort for the Dakota skipper, a butterfly of tall and midgrass prairies. The group is united in its desire to keep the skipper's status healthy enough that it will not need Endangered Species Act (ESA) protection.

**Piping Plover (*Charadrius melodus*)** Cooperative efforts to protect this small shorebird, which is classified in the Great Lakes region as endangered, are paying off this year, with more plover young sighted in this region

since the population was listed in 1985. Preliminary reports from the 1995 nesting season indicate that at least 21 pairs nested this year and produced approximately 40 fledglings.

**Eastern Prairie Fringed Orchid (*Platanthera leucophaea*)** As part of the artificial pollination project for this threatened wildflower, which is being coordinated by The Nature Conservancy and the FWS Chicago, Illinois, Field Office, over 60 volunteers from TNC's Volunteer Steward Network censused orchid populations, hand-pollinated orchids, and collected and dispersed seeds for the third year in a row. It may be several years before results from the seed dispersal are apparent, but this year we were rewarded with dramatic population increases at sites that were managed as grasslands through prescribed burning and clearing of invasive, non-native brush. Land managers with the Lake County Forest Preserve District were particularly delighted to see over 100 flowering plants at one site where no more than 5 plants have been seen annually for 8 years.

The much-needed habitat management was accomplished through ESA section 6 funding and the cooperation of the Illinois Department of Natural Resources, three County Forest Preserve Districts, private landowners, volunteer, the TNC, and the FWS Chicago Office.



**Eastern prairie fringed orchid**  
FWS photo

## Region 4

**Clasping warea (*Warea amplexifolia*)** At Lake Griffin State Recreation Area in Leesburg, Florida, park managers, aided by a grant from the FWS, are continuing recovery efforts for this endangered, summer-flowering annual. Encroaching evergreen oaks are being removed from the species' pineland habitat and protective fences have been built. In addition, the Florida Division of Forestry has been producing wiregrass (*Aristida stricta*) plants from seed collected from another State park. Over 2,000 wiregrass plants are being transplanted into warea habitat to restore the habitat's understory.

**Mussels** The FWS Jacksonville, Florida, Field Office is sponsoring several surveys and recovery efforts by the National Biological Service (NBS) for the conservation of freshwater mussels. An on-going status survey on mussels of the Altamaha River system of central Georgia is focusing on seven species restricted to that drainage, including the Altamaha spiny mussel (*Elliptio spinosa*). Recent recovery projects include NBS research on which fish species host the larvae of four mussels that are proposed for listing, and a study to determine the effects of sedimentation on mussels and fish communities within several Apalachicola River system tributaries.

In addition, the FWS Jacksonville and Asheville, North Carolina, Field Offices are cooperating to fund research projects and outreach activities. One study at the NBS Virginia cooperative research unit involves experiments on how best to feed and raise juvenile mussels in tanks for eventual placement into native habitat. The other project, which is being conducted by the NBS Tennessee co-op unit, will investigate the potential of using fish hatchery raceways to propagate mussels for reintroduction. Both research projects are using non-endangered mussels as surrogates for listed species. The outreach activities, initiated by the Asheville office in cooperation with the FWS Jacksonville and Jackson, Mississippi, Field Offices, include an exhibit at the Tennessee Aquarium in Chattanooga on the conservation of freshwater aquatic biodiversity and a travelling interactive display on mussels. Also, the Asheville office has developed a freshwater ecosystem "trunk" or container that provides educators with a variety of educational material on lesser known aquatic species.

## Region 5

**Indiana Bat (*Myotis sodalis*)** Sightings of the Indiana bat in New Jersey are on the rise. This endangered mammal was first documented in the State in 1993, when a colony was found hibernating in an abandoned mine. Two additional Indiana bat hibernacula were discovered in 1994, also within abandoned mines. In July 1995, biologists captured a post-lactating female Indiana bat, confirming summer breeding activity in New Jersey.



**Indiana bats**

Merlin D. Tuttle/Bat Conservation International

**Northeastern Tiger Beetle (*Cicindela dorsalis dorsalis*)** Historically found in "great swarms" along New Jersey's undeveloped beaches from Sandy Hook to Holgate, the northeastern tiger beetle had disappeared from the State by the 1970's. Recently, the FWS began to restore this threatened insect to portions of its former range. In October 1994, biologists with the FWS New Jersey Field Office and tiger beetle researcher C. Barry Knisley of Randolph-Macon College (Ashland, Virginia), in cooperation with the National Park Service, reintroduced approximately 600 beetle larvae at 2 sites on the Sandy Hook unit of the Gateway National Recreation Area. The larvae were collected from Virginia populations along the Chesapeake Bay.

During a July 1995 survey of the reintroduction sites, biologists found about 50 adult beetles. The predatory

insects displayed normal feeding and mating behavior. In addition, the presence of active larvae confirmed that beetles were reproducing. The success of the first year's reintroduction exceeded expectations, and another release of larvae is scheduled to take place shortly.

### **Dwarf Wedge Mussel (*Alismidonta heterodon*)**

Volunteers from the New England Aquarium Dive Club, Vermont Field Office of The Nature Conservancy (TNC), and FWS New England Field Office spent a day diving in the Connecticut River to search for this endangered mollusk. FWS biologists and Chris Fichtel of TNC trained the volunteers in identifying freshwater mussels and their habitats, and provided back-up support (e.g., food, equipment).

The 9 volunteer divers found 11 dwarf wedge mussels, all in depths of 8 to 13 feet. Because the day was so successful, a number of the divers asked to assist in future explorations of the Connecticut River. This was the second time the New England Aquarium Dive Club has volunteered to help search for mussels and, we hope, not the last.

**Atlantic Salmon (*Salmo salar*)** Wild stocks of Atlantic salmon from seven Maine rivers constitute a distinct population that was proposed September 29 for listing as threatened under the ESA. The FWS and State of Maine are working closely to produce fry for augmenting the reduced wild salmon populations, using captured wild fish as broodstock. Thousands of hatchery-produced salmon fry were released recently into three of the seven rivers. Each river received only fry from stock native to that river.

The Craig Brook National Fish Hatchery has been converted to a river-specific facility capable of holding and isolating fish from five of the seven rivers. The FWS plans to stock all five rivers next year.

## Region 7

### **Aleutian Canada Goose (*Branta canadensis leucopareia*)**

The Aleutian Canada goose continues to make progress toward recovery. In August, a total of 173 geese were translocated to Yunaska and Skagul Islands in the Aleutian Chain. Improvements in handling the wild-caught geese resulted in no losses despite the 48-hour holding time between capture and release.

Fifty percent (86 geese) of the translocated birds were female goslings, which will improve the chances for successful reestablishment of a nesting population. The first long-distance (500 miles) translocation in 1994 proved successful when 35 percent of the geese released on Yunaska Island were observed on the wintering grounds in California last winter.

The Aleutian Canada goose breeding pair survey of Alaid/Nizki Islands in summer 1995 produced an estimate of 124 nests, a four-fold increase from the 1992 estimate, indicating that the islands' nesting population is self-sustaining.

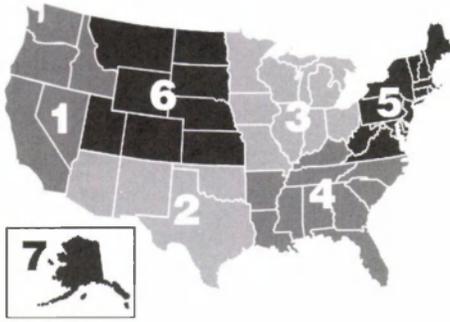
### **Aleutian Shield Fern (*Polystichum aleuticum*)**

Recovery efforts in the summer of 1995 involved the collection of fronds from wild populations for cultivation by the New York Botanical Garden and the Royal Botanical Garden (Kew) Gardens in Kew, England. Living material transferred to these facilities last year from a previous experiment are contaminated with algae, so an attempt will be made to cultivate this species directly from spores. Spores will also be supplied to the Cincinnati Zoo Plant Conservation Program, where they will be placed into a germplasm repository.



**Aleutian shield fern**

Brian Anderson/FWS



## Region 2

The U.S. Fish and Wildlife Service's (FWS) New Mexico Ecological Services State Office has been working with Bitter Lake National Wildlife Refuge, the FWS Albuquerque Regional Office (Division of Water Resources), New Mexico Department of Game and Fish, USDA Natural Resources Conservation Service (formerly the Soil Conservation Service), The Nature Conservancy, and the New Mexico Natural Heritage Inventory to develop conservation agreements for three springsnail species that are candidates for listing under the Endangered Species Act (ESA). The Chupadera springsnail (*Pyrgulopsis* (= "*Fontelicella*") *chupadae*), Roswell springsnail (*Pyrgulopsis* (= "*Fontelicella*") *roswellensis*), and Koster's tryonia (*Tryonia kosteri*) are all endemic to New Mexico. The Chupadera springsnail is found only on private land, while the other two species are known from springs on Bitter Lake NWR and on private land. FWS biologists are participating in efforts to determine the current status of these species and are working with private landowners to protect springs that support the snails.

The U.S. Department of State has agreed to prepare a Programmatic Environmental Impact Statement (PEIS) to address the cumulative impacts of bridges over the Rio Grande between Texas and Mexico. The FWS, along with other Federal agencies (General Services Administration, Army Corps of Engineers, Border Patrol, Customs Bureau), is participating in the effort. Currently, 15 bridges span the Rio Grande in the stretch from Del Rio to Brownsville alone, and another 9 are proposed for construction. At least 20 listed species of plants and animals, and hundreds of rare or peripheral species, occur in the Lower Rio Grande Valley.

Since the turn of the century, approximately 95 percent of the native Tamaulipan thornbrush habitat

once found in this area has been cleared for agriculture and urban development. The remaining 5 percent of the Lower Rio Grande area of Texas still supports many unique and rare species. Because of the need to protect the remaining native habitats, three national wildlife refuges are located in this area. In fact, the Lower Rio Grande Valley National Wildlife Refuge was established specifically to preserve habitats along the lower Rio Grande and to establish a "wildlife corridor" to connect larger "islands" of habitat in the United States. Unfortunately, additional bridges or other development proposed for construction along the Rio Grande in this area may inhibit the movement of wildlife along the narrow corridor of habitat between the U.S. and Mexico. Secondary and indirect impacts associated with construction of an international bridge (increased highway construction and other development) are often as detrimental to wildlife resources as the direct impacts of the bridge itself.

Representatives of the FWS Lower Rio Grande Ecosystem Team attended an interagency scoping meeting for the PEIS last spring in Austin, Texas, along with about 20 other State and Federal agencies. Three public scoping meetings were held in May 1995 in Harlingen, Laredo, and El Paso, Texas. The FWS provided written comments to the State Department on June 12, 1995. The final PEIS on the bridge construction projects is expected by March 1996.

## Region 3

In late June, the Emergency Response Office of the Environmental Protection Agency (EPA) became concerned that the Indiana bat (*Myotis sodalis*) might be harmed by emergency action to remove barrels of toxic waste from a Superfund Site along the Stillwater River northwest of Dayton, Ohio. This portion of the river has scenic river status and contains mature trees that show potential as roosting habitat for Indiana bats. After a field review of the clean-up sites and proposed remedial actions, a biologist from the FWS Reynoldsburg, Ohio, Field Office identified activities that could proceed immediately without affecting the Indiana bat or its habitat. Other sites will be evaluated further as the clean-up effort proceeds.

In July 1995, The Nature Conservancy (TNC) and the FWS Bloomington, Indiana, Field Office initiated

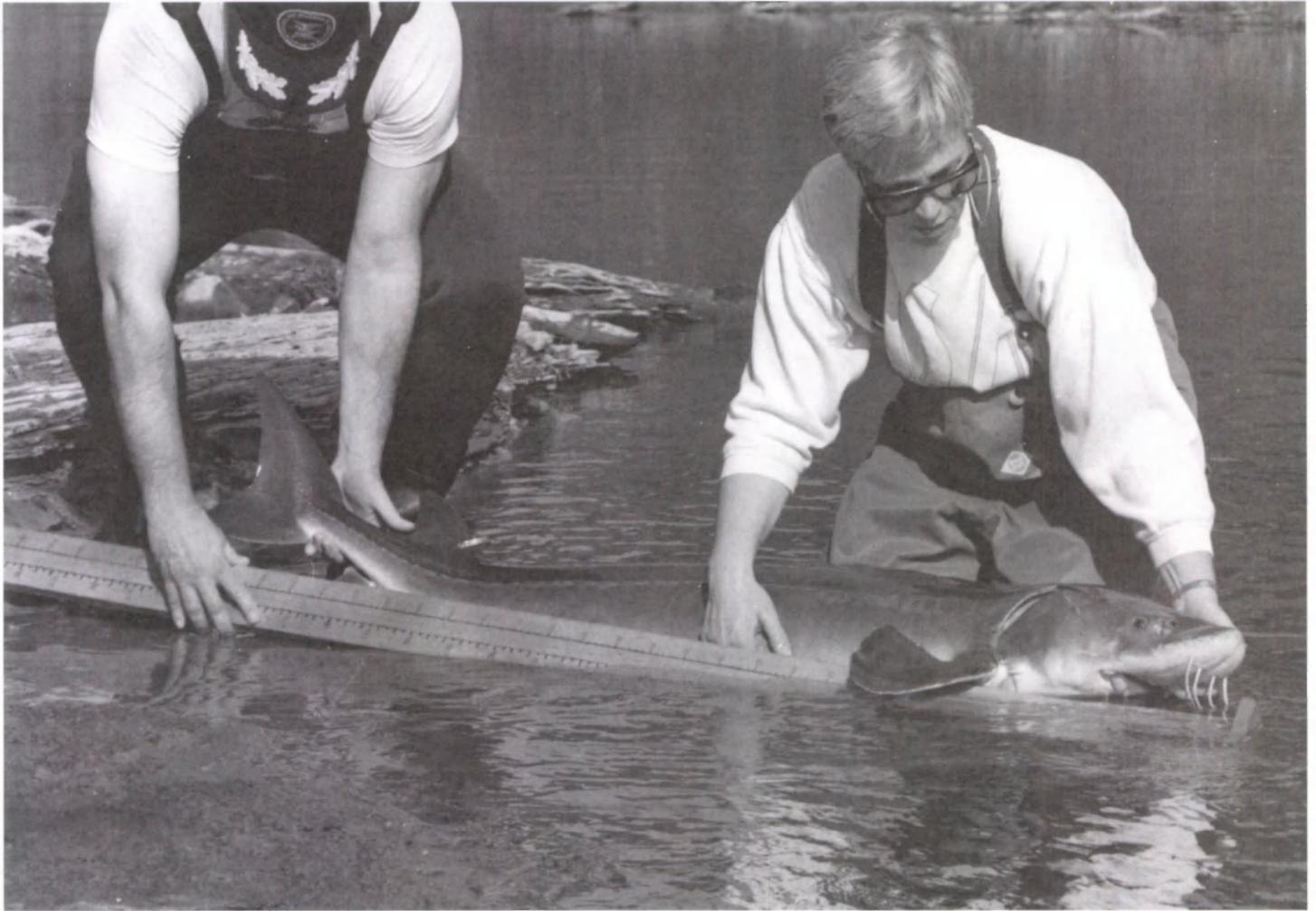
much needed conservation efforts for the endangered Mitchell's satyr butterfly (*Neonympha mitchellii mitchellii*). Only five apparently viable populations remain rangewide (Indiana and Michigan). At the time of its listing, two populations existed in Indiana. Unfortunately, recent surveys failed to locate the butterfly at one of the two previously occupied sites. In an attempt to strengthen the Indiana population, efforts to reintroduce the butterfly to a nearby TNC-owned property were completed this year. Biologists will monitor the site next year to determine if the project was successful.

In an effort to determine the movements of lake sturgeon (*Acipenser fulvescens*) in Wisconsin's Wolf River, large sturgeon were collected and implanted with radio tags for tracking over a 3-year period. The fish were released upstream of the Shawano Hydroelectric Dam. If they are found to migrate downstream through the Shawano Dam and the next downstream dam (Shawano Paper Mills Dam), then the installation of fish ladders at these dams will likely be required to allow lake sturgeon and other fish species to move back upstream to Menominee Indian Tribal waters on the Wolf River. The Menominee Reservation was a historic spawning area for the lake sturgeon before fish passage was blocked by the two dams.

Approximately 11,000 visitors learned about endangered species recently during a "Conservation Fest" at the Kansas City, Missouri, Zoo. The FWS Columbia, Missouri, Field Office hosted an endangered species booth during this 2-day event.

## Region 5

In August 1995, the FWS New Jersey Field Office concluded informal consultation with the EPA regarding changes in plans for the clean-up of the Gloucester Environmental Management Service's (GEMS) Superfund site in Camden County, New Jersey. The EPA's original design for removal of contaminated groundwater at the GEMS landfill could have damaged adjacent wetlands supporting over 25,000 clumps of the swamp pink (*Helonias bullata*), a threatened wildflower. Working with FWS biologists, EPA modified the project by reducing the number of groundwater extraction wells to avoid draining the critical wetlands while



**The lake sturgeon is a large fish that is not listed under the ESA but is considered a species of concern.**  
 Michigan Technological University Photo Services

allowing capture of the contaminant plume. Long-term hydrological and vegetative monitoring will be conducted to ensure that the redesigned clean-up plan does not adversely affect swamp pink habitat.

*The Freshwater Mussels of Vermont*, a new publication resulting from years of joint effort by the FWS, Vermont Department of Fish and Wildlife, and private groups and individuals, is now available. It describes the distribution and status of all freshwater mussels known to occur in Vermont, and includes distribution maps and photos (in both color and black-and-white) of each species. Introductory sections discuss ecology and life history, threats, and historical and current mussel surveys. The price is \$6.00 (postpaid). To order, contact The Nature Conservancy, 27 State Street, Montpelier, Vermont 05602 (ATTN: Chris Fichtel).

## Region 7

Work during the summer of 1995 focused on pinpointing the cause(s) of the spectacled eider's (*Somateria fischeri*) precipitous population decline in Alaska. Twenty adult male eiders were collected from St. Lawrence Island in early May during migration to their wintering areas. Satellite transmitters were implanted in 9 males from Russia, 10 females from the Yukon Delta, and 10 females from Prudhoe Bay. Tissue samples were collected to screen for contaminants, and prey items collected from these birds are being identified.

Research conducted by the National Biological Service has included tissue analysis of lead levels in spectacled eiders from the Yukon Delta National Wildlife Refuge and North Slope in Alaska, as well as eiders from Russia. Blood samples and x-ray images were collected

from females at hatching time and again 30 days later, and from ducklings at 30 days of age. The X-rays indicated that some females and ducklings had ingested lead shot.

**Items for Recovery Updates and Regional News are provided by endangered species contacts in FWS regional and field offices.**

## Listing Proposals August/October 1995

In April 1995, Congress placed a moratorium on final rules adding plants or animals to the list of threatened and endangered species or designating critical habitat while it considers various bills to amend and reauthorize the Endangered Species Act. As of fiscal year 1996, that moratorium has been extended to the preparation and publication of listing proposals.

From August 1, 1995, until the moratorium on listing proposals took effect, the Fish and Wildlife Service (FWS) proposed listing 109 species—105 plants and 4 animals—as endangered or threatened. If the proposals are approved, Endangered Species Act protection will be extended to the following:

**Seventy-four Hawaiian Plants** During this time, the FWS published 5 separate proposals to list 74 plant taxa endemic to the Hawaiian Islands. These plants have declined significantly in population and distribution, and some now number fewer than 10 surviving individuals. They face a multitude of threats, including competition from introduced plant species; habitat destruction by feral or domestic non-native animals; predation by rats, insects, and other introduced animals; and agricultural, military, and urban development. The Hawaiian names, if any, follow the scientific names as listed below.

One package, published in the September 25 *Federal Register*, proposed the classification of endangered for 13 plant species endemic to the island of Hawai'i:

- Clermontia drepanomorpha*, or 'oha wai, a tree in the bellflower family (Campanulaceae);
- Cyanea platyphylla*, or haha, a palm-like shrub in the bellflower family;
- Hibiscadelphus giffardianus*, or hau kuahiwi, a tree in the mallow family (Malvaceae) that exists in cultivation but is extinct in the wild;
- Hibiscadelphus hualalaiensis*, or hau kuahiwi, a tree in the mallow family that is also extinct in the wild;
- Melicope zahlbruckneri*, or alani, a tree in the citrus family (Rutaceae);
- Neraudia ovata*, a shrub in the nettle family (Urticaceae);
- Phyllostegia racemosa*, or kipaona, a climbing vine in the mint family (Lamiaceae);
- Phyllostegia velutina*, a vine in the mint family;
- Phyllostegia warsbaueri*, a vine in the mint family;
- Pleomele hawaiiensis*, or hala pepe, a tree in the agave

family (Agavaceae);

*Pritchardia schattaueri*, or loulu, a large palm in the family Arecaceae;

*Sicyos alba*, or anunu, a vine in the gourd family (Cucurbitaceae); and

*Zantboxylum dipetalum* var. *tomentosum*, or a'e, a tree in the citrus family.

A separate September 25 *Federal Register* publication proposed to list 19 plant species endemic to the island of Kaua'i for ESA protection. Seventeen were recommended for listing as endangered:

*Alsinidendron lynchnoides*, or kawawaenuhu, a subshrub in the pink family (Caryophyllaceae);

*Alsinidendron viscosum*, a subshrub in the pink family;

*Cyanea remyi*, or haha, a shrub in the bellflower family;

*Cyrtandra cyaneoides*, or mapele, a shrub in the African violet family (Gesneriaceae);

*Delissea rivularis*, or 'oha, a shrub in the bellflower family;

*Hibiscadelphus woodii*, or hau kuahiwi, a small tree in the mallow family;

*Hibiscus waimeae* ssp. *banneruae*, or koki'o ke'oke'o, a tree in the mallow family;

*Kokia kauaiensis*, or koki'o, a tree in the mallow family;

*Labordia tinifolia* var. *wabiawaensis*, or kamakahala, a shrub or small tree in the family Loganiaceae;

*Phyllostegia knudsenii*, a recently discovered perennial herb or vine in the mint family;

*Phyllostegia wawrana*, a perennial vine in the mint family;

*Pritchardia napaliensis*, or loulu, a small palm;

*Pritchardia viscosa*, or loulu, a taller species of palm;

*Schiedea belleri*, a vine in the pink family;

*Schiedea membranacea*, a perennial herb in the pink family;

*Schiedea stellarioides*, or laulihilihi, a subshrub in the pink family; and

*Viola kauaensis* var. *wabiawaensis*, a perennial herb in the violet family (Violaceae).

Because the other two Kaua'i plants in the listing proposal are believed to be vulnerable but not in imminent danger of extinction, they were proposed for classification under the less critical status of threatened: *Cyanea recta*, or haha, an unbranched shrub in the bellflower family; and

*Myrsine linearifolia*, or kolea, a shrub in the family Myrsinaceae.

One of 3 listing packages for Hawaiian plants published on October 2 proposed the endangered classification for 25 plant species endemic to the island of O'ahu:



***Neraudia ovata***  
Loyal A. Mehrhoff/FWS

*Chamaesyce herbstii*, or 'akoko, a small tree in the spurge family (Euphorbiaceae);

*Chamaesyce rockii*, 'akoko, a compact shrub or small tree in the spurge family;

*Cyanea acuminata*, or haha, an unbranched shrub in the bellflower family;

*Cyanea humboldtiana*, or haha, a shrub in the bellflower family;

*Cyanea koolauensis*, or haha, a shrub found only in the Ko'olau Mountains;

*Cyanea longiflora*, or haha, a shrub in the bellflower family;

*Cyanea st.-johnii*, or haha, a shrub named for the late botanist Harold St. John;

*Cyrtandra dentata*, or ha'iwale, a sparingly-branched shrub in the African violet family;

*Cyrtandra subumbellata*, or ha'iwale, a shrub in the African violet family;

*Cyrtandra viridiflora*, or ha'iwale, a small shrub with fleshy, heart-shaped leaves;

*Delissea subcordata*, or 'oha, a shrub in the bellflower family;

*Eragrostis fosbergii*, a recently discovered perennial in the grass family (Poaceae);

*Gardenia mannii*, or nanu, a tree in the coffee family (Rubiaceae);

*Labordia cyrtandrae*, or kamakahala, a shrub in the family Loganiaceae;

*Lepidium arbuscula*, or 'anaunau, a gnarled shrub in the mustard family (Brassicaceae);

*Lobelia gaudichaudii* ssp. *koolauensis*, an unbranched shrub in the bellflower family;

*Lobelia monostachya*, a recently discovered prostrate, woody shrub in the bellflower family;

*Melicope saint-johnii*, or alani, a slender tree in the family Rutaceae;

*Myrsine juddii*, or kolea, a highly-branched shrub in the family Myrsinaceae;

*Phyllostegia hirsuta*, an erect subshrub or vine in the mint family with stems densely covered by stiff hairs;

*Phyllostegia kaalaensis*, an herb in the mint family;

*Pritchardia kaalae*, or loulou, a member of the palm family;

*Schiedea kealiae*, a subshrub in the pink family;

*Trematolobelia singularis*, an unbranched shrub in the bellflower family; and

*Viola oahuensis*, a subshrub in the violet family.

Another listing package published October 2 proposes endangered status for three plant species endemic



***Pleomele hawaiiensis***

Loyal A. Mehrhoff/FWS

to the island of Moloka'i:

*Cyanea dunbarii*, or haha, an unbranched shrub in the bellflower family;

*Lysimachia maxima*, a sprawling shrub in the primrose family (Primulaceae); and

*Schiedea sarmentosa*, a highly-branched shrub in the pink family.

The final October 2 proposal for Hawaiian plants addresses 14 species from throughout the archipelago. All but one were proposed for listing as endangered:

*Achyranthes mutica*, a recently discovered shrub in the amaranth family (Amaranthaceae);

*Cenchrus agrimonoides*, or kamanomano, a perennial in the grass family;



**Cyanea st. johnii**  
Loyal A. Mehrhoff/FWS



**Cyanea humboldtiana**  
Loyal A. Mehrhoff/FWS

*Cyanea grimesiana* ssp. *grimesiana*, or haha, a shrub in the bellflower family;

*Cyperus trachysanthos*, or pu'uka'a, a perennial, grass-like plant in the sedge family (Cyperaceae);

*Euphorbia haeleleana*, a dioecious (male and female flowers on separate plants) tree in the spurge family;

*Isodendron laurifolium*, or aupaka, a slender shrub in the violet family;

*Panicum niuhauense*, or lau 'ehu, a perennial bunchgrass;

*Phyllostegia parviflora*, a perennial herb in the mint family;

*Platanthera holochila*, an erect herb in the orchid family (Orchidaceae);

*Sanicula purpurea*, a perennial herb in the parsley family (Apiaceae);

*Schiedea hookeri*, a sprawling or clumped perennial herb in the pink family;

*Schiedea kauaiensis*, an erect subshrub in the pink family; and

*Schiedea nuttallii*, a subshrub in the pink family.

One species that is not in as precarious a condition was proposed for listing as threatened:

*Isodendron longifolium*, or aupaka, a slender shrub in the violet family.

**Thirty California Plants** The FWS published 6 proposals to list 29 plant taxa and one lizard native to California as threatened or endangered. These species are vulnerable to such threats as: habitat damage and direct predation by grazing animals; competition from, and hybridization with, introduced plant species; urbanization; recreational development; off-road vehicle use; highway widening; vegetational succession due to alteration of natural fire cycles; wetland modification; overcollection; military activities; and herbicides.

One of four listing proposals published in the August 2 *Federal Register* would classify nine plants from California's central coast as endangered:

*Alopecurus aequalis* var. *sonomensis*, or Sonoma alopecurus, a tufted perennial in the grass family;

*Astragalus clarianus*, or Clara Hunt's milkvetch, a low-growing annual herb in the pea family (Fabaceae);

*Carex albida*, or white sedge, a perennial herb in the sedge family;

*Clarkia imbricata*, or Vine Hill clarkia, an annual herb in the evening-primrose family (Onagraceae);  
*Lilium pardalinum* ssp. *pitkinense*, or Pitkin Marsh lily, an herbaceous perennial in the family Liliaceae;  
*Plagiobothrys strictus*, or Calistoga allocarya, a small annual herb in the family Boraginaceae;  
*Poa napensis*, or Napa bluegrass, a tufted perennial bunchgrass;  
*Sidalcea oregana* ssp. *valida*, or Kenwood marsh checkermallow, a perennial herb in the mallow family; and  
*Trifolium amoenum*, or showy Indian clover, an annual in the pea family.

A second August 2 proposal would list a plant endemic to the northern Diablo Range in Alameda and Contra Costa Counties as threatened:  
*Arctostaphylos pallida*, or pallid manzanita, a shrub in the heath family (Ericaceae).

One August 2 proposal called for listing four plants and one lizard found primarily along the coast in Monterey County. The classification of endangered was proposed for:  
*Astragalus tener* var. *titi*, or coastal dunes milk-vetch, a small annual herb in the pea family;  
*Piperia yadonii*, or Yadon's piperia, a perennial herb in the orchid family;  
*Potentilla hickmanii*, or Hickman's potentilla, a small perennial herb in the rose family;  
*Trifolium trichocalyx*, or Monterey clover, a prostrate annual herb in the pea family; and  
*Anniella pulchra nigra*, or black legless lizard, a burrowing, limbless species with a diameter about the size of a pencil and a maximum length of about 9 inches (23 centimeters).

The remaining plant was proposed for listing as threatened:  
*Cupressus goveniana* ssp. *goveniana*, or Gowen cypress, a coniferous shrub or small tree in the family Cupressaceae.

The fourth August 2 proposal recommended protection for seven plants from the mountains of southern California. Two of these plants were proposed for listing as endangered:



***Trematolabelia singularis***  
 Loyal A. Mehrhoff/FWS

*Poa atropurpurea*, or San Bernardino bluegrass, a perennial; and  
*Taraxacum californicum*, or California dandelion, a perennial in the sunflower family (Asteraceae).  
 The other five were proposed as threatened:  
*Arabis johnstonii*, or Johnston's rock-cress, an herbaceous perennial in the mustard family;  
*Arenaria ursina*, or Bear Valley sandwort, a low-lying perennial herb in the pink family;  
*Castilleja cinerea*, or ash-grey Indian paintbrush, a perennial in the snapdragon family (Scrophulariaceae);  
*Eriogonum kennedyi* var. *austromontanum*, or southern mountain wild buckwheat, a perennial in the family Polygonaceae; and  
*Trichostema austromontanum* ssp. *compactum*, or Hidden Lake bluecurls, a compact annual in the mint family with long, shaggy hairs.

On August 9, four plant taxa native to southwestern California and northern Baja California, Mexico, were proposed for listing as endangered:  
*Acanthomintha ilicifolia*, or San Diego thormmint, an aromatic annual herb in the mint family;

*Dudleya stolonifera*, or Laguna Beach dudleya, a succulent perennial in the stonecrop family (Crassulaceae);  
*Hemizonia conjugens*, or Otay tarweed, an aromatic annual in the sunflower family; and  
*Monardella linoidea* ssp. *viminea*, or willowy monardella, a perennial herb in the mint family.

Finally, on October 2, the FWS proposed Endangered Species Act protection for four plant species associated with chaparral plant communities in southwestern California and northwestern Baja California, Mexico. The proposal called for classifying two species as endangered:  
*Berberis nevadensis*, or Nevin's barberry, an evergreen shrub in the family Berberidaceae; and  
*Fremontodendron mexicanum*, or Mexican flannelbush, an evergreen shrub or small tree in the cacao family (Sterculiaceae).

The other two plants were proposed for listing as threatened:  
*Ceanothus ophiocylus*, or Vail Lake ceanothus, a rounded shrub in the buckthorn family (Rhamnaceae); and  
*Nolina interrata*, or Dehesa beargrass, a yucca-like plant in the lily family.



***Eleutherodactylus cooki***

Jerry D. Hardy, Jr.

**Three Puerto Rican Species** On September 28, the FWS proposed to list two plants from Puerto Rico as endangered:

*Cordia bellonis*, a shrub in the family Boraginaceae; and

*Juglans jamaicensis*, known also as nogal or the West Indian walnut. This large tree in the family Juglandaceae also is found on the islands of Hispaniola and Cuba.

On October 2, the rock frog or *Eleutherodactylus cooki*, a species endemic to Puerto Rico, was proposed for listing as threatened. With its large, white-rimmed eyes and low, peculiar call, this frog strikes some people as a specter- or phantom-like animal.

**Atlantic Salmon** The FWS proposed in the September 29 *Federal Register* to list a distinct population segment of anadromous Atlantic salmon (*Salmo salar*), consisting of native stocks in seven Maine rivers, as threatened.

**Least Chub** Also on September 29, the least chub (*Notropis bleekeri*), a small fish now found only within a small number of springs and creeks in the Snake Valley of western Utah, was proposed for listing as endangered. A proposed designation of critical habitat is outlined in the *Federal Register*.



***Eleutherodactylus cooki* in its native habitat.**

George Drewry/FWS

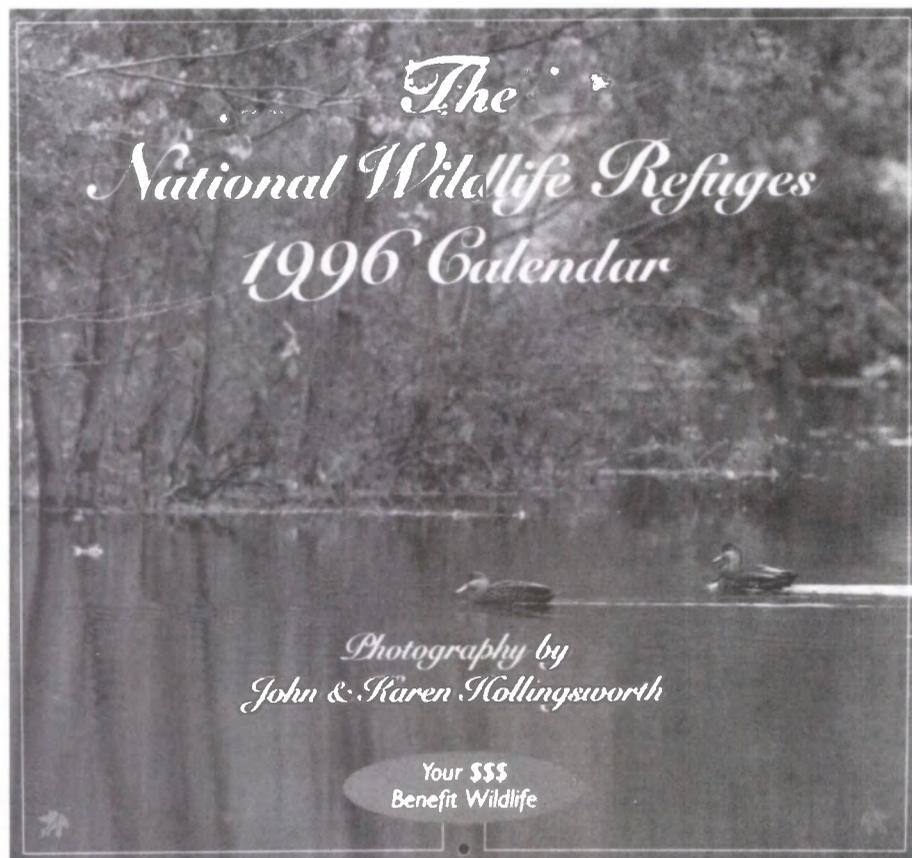
# 1996 Refuge Calendar Available

Highlighting the diversity of the National Wildlife Refuge System, this calendar gives an intimate look at habitats from the arctic tundra to the gulf coast and species from gray seals to desert fish. Photographed by natural history photographers John and Karen Hollingsworth, it includes an expanded events section ("Come Discover and Learn"), encouraging the public to discover and explore the resources of the refuge system.

For every calendar purchased, 50 cents will be donated to the National Fish and Wildlife Foundation, which will match these donations. The funds will be used for conservation and restoration of wildlife habitat, endangered species recovery activities, habitat acquisition for the refuge system, and youth education programs.

Also available is the Hollingsworths' book, *Seasons of the Wild—A Journey Through Our National Wildlife Refuges*. With more than 70 photographs and an evocative text, the book features 47 national wildlife refuges. A portion of the proceeds from the book also go to the Foundation.

To order the calendar, send \$11.95 to Worm Press, P.O. Box 235, Bellvue, Colorado 80512-0235, or call 1-800-493-2713 (VISA and Mastercard orders accepted). The price for the book is \$19.95. Please include \$3.00 for shipping and handling with each order.



**Editor's note: We are sad to report that John Hollingsworth passed away this year. Through their photography and publications, the Hollingsworths have made lasting contributions to the conservation of the Nation's wildlife resources.**

# BOX SCORE

Listings and Recovery Plans as of October 31, 1995

GROUP	ENDANGERED		THREATENED		TOTAL LISTINGS	SPECIES W/ PLANS
	U.S.	FOREIGN	U.S.	FOREIGN		
 MAMMALS	55	252	9	19	335	39
 BIRDS	74	178	16	6	275	72
 REPTILES	14	65	19	14	112	31
 AMPHIBIANS	7	8	5	1	21	11
 FISHES	65	11	40	0	116	71
 SNAILS	15	1	7	0	23	12
 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
<b>ANIMAL SUBTOTAL</b>	<b>320</b>	<b>521</b>	<b>114</b>	<b>40</b>	<b>995</b>	<b>306</b>
 FLOWERING PLANTS	406	1	90	0	497	195
 CONIFERS	2	0	0	2	4	1
 FERNS AND OTHERS	26	0	2	0	28	12
<b>PLANT SUBTOTAL</b>	<b>434</b>	<b>1</b>	<b>92</b>	<b>2</b>	<b>529</b>	<b>208</b>
<b>GRAND TOTAL</b>	<b>754</b>	<b>522</b>	<b>206</b>	<b>42</b>	<b>1,524*</b>	<b>514**</b>

**TOTAL U.S. ENDANGERED:** 754 (320 animals, 434 plants)  
**TOTAL U.S. THREATENED:** 206 (114 animals, 92 plants)  
**TOTAL U.S. LISTED:** 960 (434 animals, 526 plants)\*\*\*

\*Separate populations of a 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, 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 418 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 Interior  
Fish and Wildlife Service  
Washington, D.C. 20240*

**FIRST CLASS  
POSTAGE AND FEES PAID  
U.S. DEPARTMENT OF THE INTERIOR  
PERMIT NO. G-77**