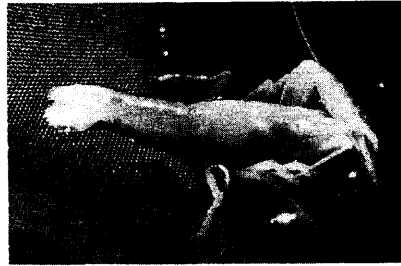
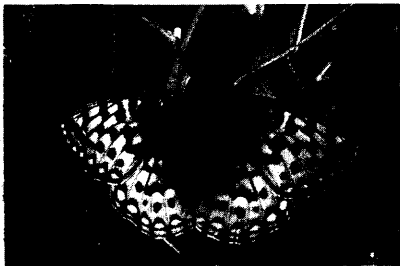

Report to Congress

Recovery Program

Endangered and Threatened Species ♦ 1994



Front and Back Cover Photo Credits

Species: Green pitcher-plant

Listed As: Endangered

Population Status: Improving

FWS PHOTO

Species: Cave crayfish

Listed As: Endangered

Population Status: Stable

KEN SMITH

Species: Red wolf

Listed As: Endangered

Population Status: Improving

CHRIS LUCASH

Species: Oregon silverspot butterfly

Listed As: Threatened

Population Status: Declining

PAUL OPLER

Right

Species: Kirtland's warbler

Listed As: Endangered

Population Status: Improving

FWS PHOTO

Report to Congress

Recovery Program

Endangered and Threatened Species ♦ 1994



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

For further information contact the Division of Endangered Species (703) 358-2171 *or*
Internet: R9FWE_DES.BIM@mail.fws.gov *or* <http://www.fws.gov>

Endangered Species

THE ROAD TO RECOVERY



The Road to Recovery is a long and complicated journey that is leading to an increasing number of successes, thanks to the Endangered Species Act. The plants and animals you see here were in decline. Today, they represent individual victories—from stabilized or increased populations to a change in their threatened or endangered status. They are reminders that wildlife and civilization can be compatible, that recovery comes in stages and that endangered really does mean there's still time.

U.S. DEPARTMENT OF INTERIOR U.S. GEOLOGICAL SURVEY

The Road to Recovery, full-color poster, depicts some of the progress being made in the effort to restore vulnerable wildlife. It features six threatened or endangered animals and plants—from the bald eagle to the western prairie-fringed orchid—that are now stable or even improving in status. Illustrations for the poster were produced by artist Dorothy Michele Novick, who passed away in 1994. They were her last work. Through this poster and other illustrations she produced for the Service, Ms. Novick made lasting contributions to the conservation of our nation's wildlife resources.



Species: Ozark big-eared bat
Listed As: Endangered
Population Status: Stable

CONTENTS

EXECUTIVE SUMMARY	11
INTRODUCTION.....	13
PROGRAM STATUS.....	15
Recovery Overview	15
Recovery Policy	15
Recovery Implementation	16
Examples of Recovery	18
Cooperation with Others	18
Ecosystem Approach to Recovery	20
Relationship of Recovery to Other Sections of the Act	20
Section 6 (Cooperation with the States)	20
Section 7 (Interagency Cooperation)	22
Section 10(a)(1)(B) (Habitat Conservation Plans)	23
Recovery Successes.....	24
Examples of Recovery Successes.....	24
Monitoring Recovered Species	26
Delistings and Reclassifications	27
RECOVERY PROGRAM ANALYSES AND	
STATUS OF LISTED SPECIES	29
Recovery Program Analyses	29
Endangered Species Recovery Appropriations	29
Summary of the Status of Listed Species	30
Species-by-Species Status Summary	34
SUMMARY	37

LIST OF MAPS

Map 1. Fish and Wildlife Service Regional Office
Boundaries

Map 2. Listed Species by State/Territory as of
September 30, 1994

LIST OF FIGURES

Figure 1. Distribution of Listed Species by
Taxonomic Group

Figure 2. Summary Analysis of the Status of
Listed Species

LIST OF TABLES

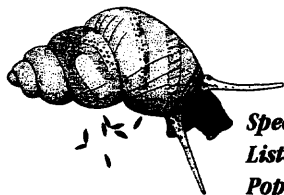
Table 1. Summary of Current Population
Trends of Listed Species Based on
Time of Listing

Table 2. Species Under Consideration for
Delisting or Reclassification

Table 3. Recovery Program Directives for
FY 1993 and FY 1994

APPENDIX

Status of Listed Species Under Fish and Wildlife
Service Jurisdiction



Species: Alamosa springsnail
Listed As: Endangered
Population Status: Improving

Literature citations should read as follows:

U.S. Fish and Wildlife Service. 1995. *Report to Congress: Endangered and Threatened Species Recovery Program*.
U.S. Department of the Interior, Fish and Wildlife Service,
Washington, D.C. 64 pp.



THE SECRETARY OF THE INTERIOR
WASHINGTON

FOREWORD

*T*he American landscape has undergone dramatic changes over the past 300 years. The towering forests and vast prairies that characterized the landscape found by the first European settlers are now crisscrossed by highways and are fragmented by a patchwork of cities and towns, farms and subdivisions. With the growing population, the demands for increased agriculture, industry, and other pursuits accelerate the changes. During the middle years of the present century, it became increasingly clear that many of our native species of plants and animals were being stressed by such activities; some had been driven to extinction. Recognizing these trends, Congress took action in 1973 by passing the Endangered Species Act, making the conservation of endangered and threatened species and the ecosystems that sustain them a National priority and instituting public policy to work for their recovery.

Over the two-century period preceding the passage of the Endangered Species Act, scientists estimate that over 500 species slipped to extinction in the United States, most due to habitat loss. In the 21 years since the passage of the Endangered Species Act, 909 species have been determined to be either endangered or threatened, and, for all but 7, their extinction has been prevented. The U.S. Fish and Wildlife Service has been tasked to first

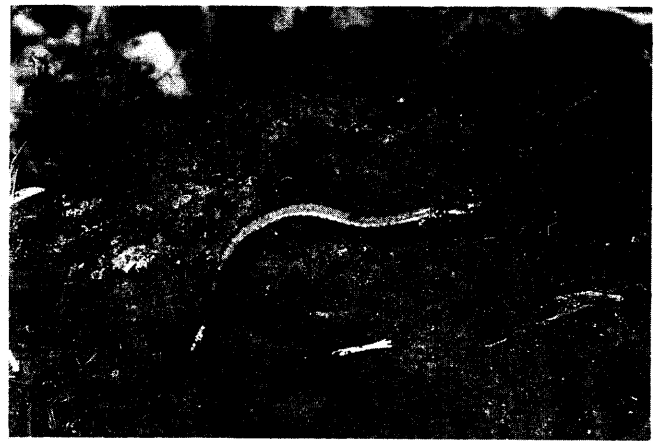
stabilize and then recover these species by securing their populations, reversing their declines, and bringing them back to a point where the protections of the Act are no longer needed.

This 1994 report to Congress chronicles the success of the Service's efforts to recover these species. A good case study, representing the success of the Service's recovery efforts is the conservation of the bald eagle, our national symbol. Based on historical information available, these birds nested throughout the United States. In 1967, bald eagle numbers in the lower 48 States had dropped to approximately 417 nesting pairs. Population declines were attributed to habitat loss, illegal shooting, and the effects of DDT (a widely used insecticide) on reproductive success. In 26 years, the eagle rebounded to more than 4,000 nesting pairs in 1993. Additionally, scientists estimate that 5,000 to 6,000 juvenile bald eagles dwell in the lower 48 States. This success was due to reintroductions, the banning of DDT, public awareness campaigns, aggressive law enforcement, and other actions involving the Service, States, private organizations, and the cooperation of the American public. As a result, on July 12, 1994, the Service proposed to reclassify the bald eagle from endangered to threatened in all of the lower 48 States.



Species: Iowa Pleistocene snail
Listed As: Endangered
Population Status: Uncertain

FWS PHOTO



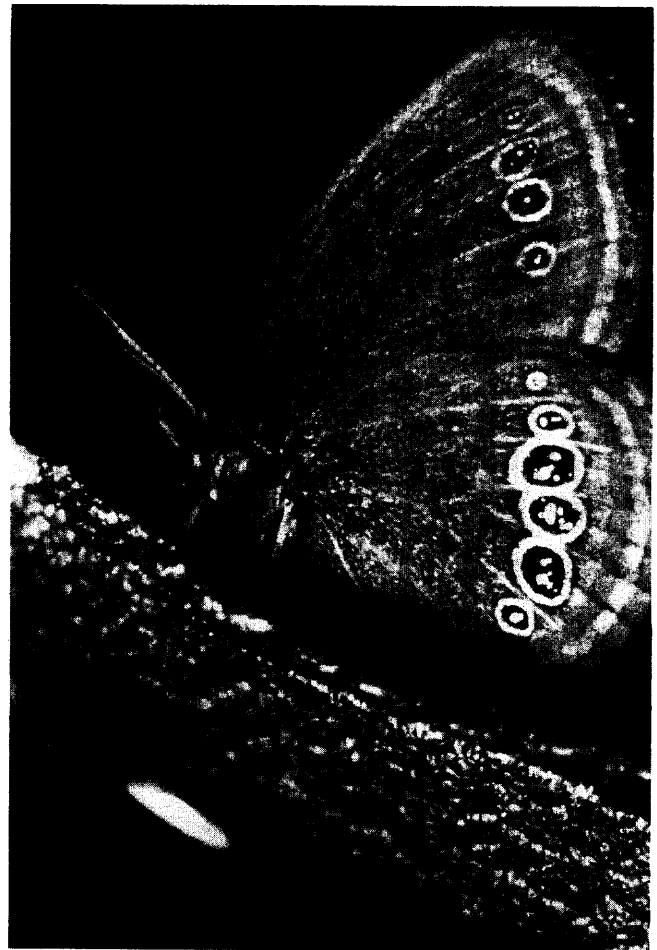
Species: Shenandoah salamander
Listed As: Endangered
Population Status: Declining

C. KENNETH DODD, JR.



Species: Hawaiian hawk chick
Listed As: Endangered
Population Status: Stable

CURT GRIFFIN



Species: Mitchell's satyr butterfly
Listed As: Threatened
Population Status: Uncertain

FWS PHOTO

EXECUTIVE SUMMARY

PURPOSE

On October 7, 1988, President Reagan signed into law a bill amending the Endangered Species Act and authorizing increased appropriations to implement the Act through fiscal year 1992 (Public Law 100-478/50 CFR 1533(f)(3)). One of the major amendments made more specific the general requirement that the Secretaries of the Interior and Commerce develop and implement recovery plans. The amendment further directs the Secretaries to report every 2 years on the status of efforts to develop and implement recovery plans for all listed species and on the status of all species for which recovery plans have been developed. This report is required by section 4(f)(3) of the Act and it is the third Report to Congress on the status of the recovery program for federally listed endangered and threatened species under the Secretary of the Interior's jurisdiction.

The Endangered Species Act, passed by Congress in 1973, established a strong leadership role for the Federal government in the conservation of species at risk of extinction. Congress envisioned a network of international, national, State, and private organizations working together toward common goals. It was made clear that the people of the United States were to act together as a team to conserve not only individual species, but their habitats as well.

BACKGROUND

Recovery is the cornerstone and ultimate purpose of the endangered species program. Recovery is the process by which the decline of an endangered or threatened species is arrested or reversed, and threats to its survival are neutralized, so that its long-term survival in nature can be ensured. The goal of this process is to restore listed species to a point where they are secure, self-sustaining components of their ecosystem so as to allow delisting. The Secretary of the Interior has delegated responsibility for endangered species recovery to the Fish and Wildlife Service.

Recovery of threatened and endangered species is a tremendous challenge; but it can be done and the successes are much celebrated by the American public.

Recovery must reverse decline that has occurred over the past two centuries. The habitat base for species at the time listing under the Act becomes necessary is usually very limited. Reversing long-term declines and finding innovative solutions, which conserve the habitat of listed species, while also accommodating society's other goals is another challenge. Many success stories already exist for many species that are on the road to recovery. Our success are the results of many years of research, restoration, protection, and active management, but most importantly, the key ingredient is almost always many partners working together to achieve common goals.

The primary objectives of the Service's recovery program, while working in close cooperation with our partners, are to: (1) complete development of recovery plans within 2.5 years, to the maximum extent possible, (2) determine tasks necessary to reduce or eliminate the threats to the highest priority species, (3) apply available resources to the highest priority recovery tasks, and (4) reclassify and delist species as appropriate. Recovery activities include: defining threats through research on biological requirements, managing threats through habitat protection and restoration, and achieving a stable or upward population trend for an endangered species. All of these activities and associated efforts must allow time for an endangered species to respond biologically to protective efforts implemented on its behalf.

The Service recognizes that preventing the extinction of individual species is impractical when other interdependent species that are members of the same ecosystem continue to decline. The Service is directing increased attention to producing multi-species or ecosystem recovery plans that address the needs of other species that are not primary targets of the plan, and will continue to emphasize conservation of species through a multi-species or ecosystem approach.

Although the endangered species recovery program is relatively new with respect to the considerable time required to reverse a species' decline, the program has produced many successes, including reclassifications from endangered to threatened, delistings, and achieving significant objectives on the path to recovery. Highlights of these successes are included in this report.

RESULTS

The extraordinary success of the recovery program is demonstrated by the fact that even with a substantial increase in the number of species listed over the past decade, over 41 percent of the 909 species listed as of September 30, 1994, have been stabilized or are improving. This success is attributed to the efforts of the Service, other Federal agencies, States, tribal governments, and private organizations and individuals. As of September 30, 1994, 893 of the 909 listed species in the United States were under the jurisdiction of the Fish and Wildlife Service. The remaining 16 species were administered by the National Marine Fisheries Service. Two hundred and eighty-two of the 893 had been listed for less than 3 years. Additionally, species that had been

intervals. This table shows the percent of species that are known to be stable or improving, declining, or for which the population trend is uncertain. Stable or improving species are those for which the trend toward extinction has been halted or reversed, in the wild. Overall, the data on stable or increasing species illustrates that recovery of endangered species takes time. Just as the threats to these species accumulated through time to result in the precarious status seen for many species today, recovery will also require time.

Of all the species listed between 1968 and 1993, only 7, or less than 1 percent, have been officially recognized as extinct and subsequently delisted. Preventing the

Table 1: Summary of Current Populations Trends of Listed Species Based on Time of Listing

Year Listed (5 Year Intervals)	Percent of Species Stable or Improving	Percent of Species Declining	Percent of Species with Uncertain Population Trends
1968-1973	58 %	30 %	12 %
1974-1978	42 %	41 %	17 %
1979-1983	44 %	27 %	29 %
1984-1988	45 %	39 %	16 %
1989-1993	22 %	34 %	44 %

listed in the 3 years prior to that date did not yet have approved recovery plans. Many, however, had plans in some stage of development.

Of the 893 species, 484 (54 percent) had final approved recovery plans as of September 30, 1994, while 185 (21 percent) had a plan that was in draft (i.e., Technical or Agency Draft plans). Of the remaining 224 species without recovery plans, 159 had been listed for less than 3 years but had recovery plans under development, and 14 species (2 percent) were exempted from plan development for reasons indicated in this report. The remaining 51 species were listed longer than 3 years and did not have approved recovery plans or plans being developed. The Service has implemented a plan to eliminate this backlog by the end of FY 1997.

Table 1 summarizes the population status and trends of 776 species federally listed as of 1993 based on 5 year

extinction of the remaining 99 percent, which is a major portion of our Nation's heritage, is perhaps the biggest success story of the Act. The Act has also turned the tide from declining to stable or increasing for many species. Fifty-eight percent of the 108 species listed between 1968 and 1973 are currently known to be stable or improving in their native habitats. Of the 294 species listed between 1989 and 1993, only 22 percent have recovered to the point that they are stable or increasing. The fact that almost all listed species remain extant and that many species are on their way to reaching recovery goals speaks to the success of the Act as a mechanism for conserving our Nation's natural heritage.

For the species in decline or where population trends are uncertain, the Service and its partners in recovery are collecting biological information, developing recovery strategies, and implementing management activities that will stabilize, halt, or reverse the trends toward extinction.

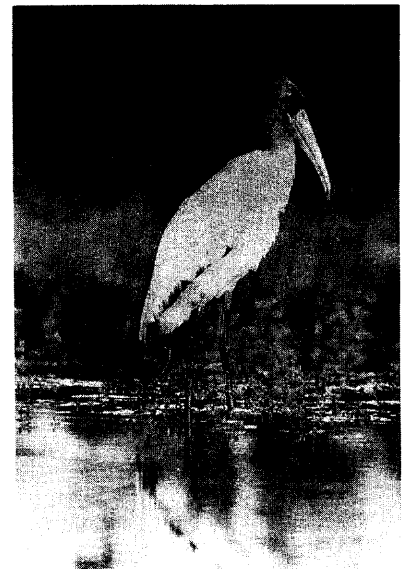
INTRODUCTION

*T*he Endangered Species Act of 1973 [16 U.S.C. 1531 et seq.] (Act) is one of the most comprehensive pieces of environmental legislation ever enacted by Congress. Fiscal year (FY) 1993 was the 20-year anniversary of the Act, and coincided with profound Congressional and public interest in the Act's reauthorization as well as wide-ranging debate over its purposes, effects, and accomplishments. The Act calls for the conservation of threatened and endangered species, and more importantly, the ecosystems upon which they depend. The Act established the Federal government as the national leader in the conservation of species at risk of extinction. To accomplish the objectives of the Act, Congress envisioned a network of international, national, Federal, State, and private organizations working together toward common goals.

In passing this landmark legislation, Congress specifically intended to provide a means to conserve the ecosystems upon which endangered and threatened species depend and to provide a program for the conservation of these species. The Act defines "conserve" as the use of "all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act

are no longer necessary...." The Act further declared that the policy of Congress is that all Federal departments and agencies shall seek to conserve endangered and threatened species, and use their own authorities to further the purposes of the Act. This policy, in conjunction with the statutory definition of "conserve," makes clear that Congress intended all Federal agencies to promote the recovery of listed species. The Fish and Wildlife Service's (Service) responsibilities under the Act include: consultation, listing, recovery planning and implementation, permitting, and prelisting.

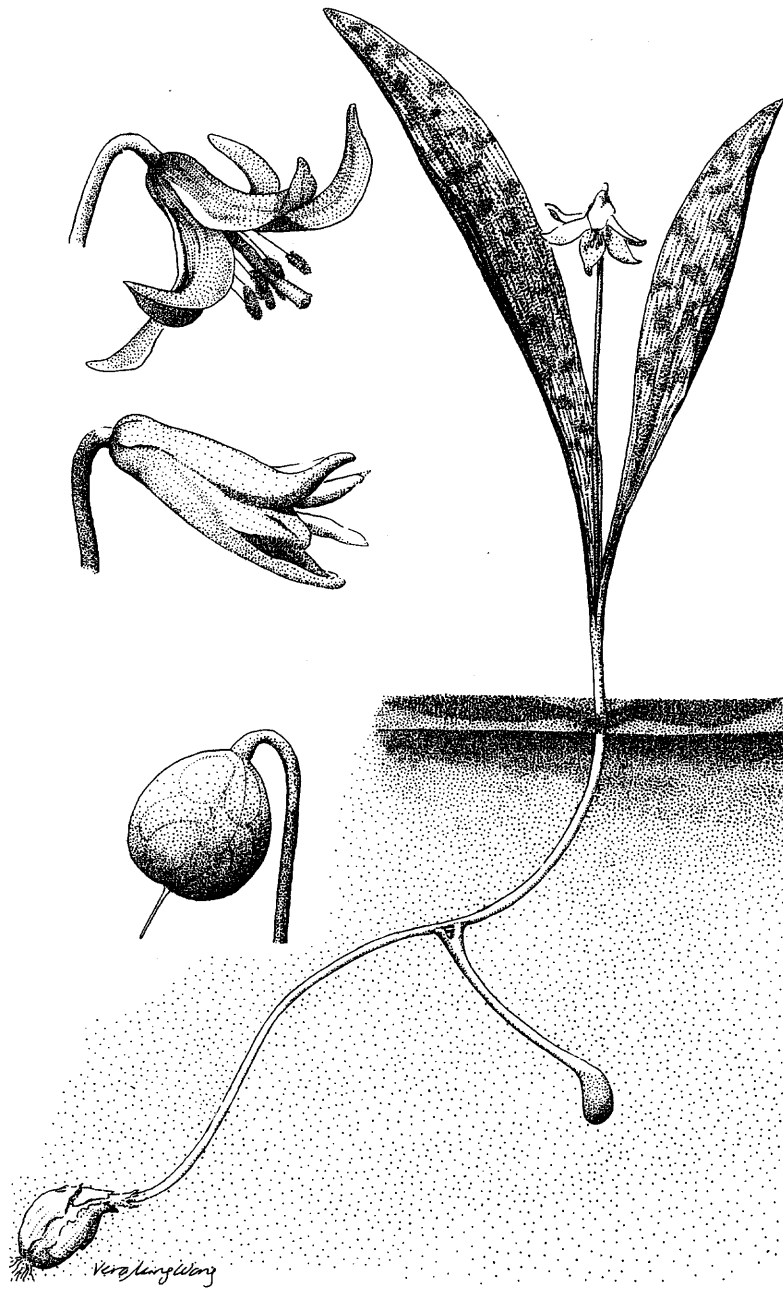
This Report to Congress represents an accounting of the recovery progress for all federally listed endangered and threatened species under the jurisdiction of the Service occurring in the United States and Trust Territories as of September 30, 1994. While some of the species covered in this report are found in both the United States and foreign countries, the Service has no authority to implement recovery programs for species outside United States jurisdiction and the status of foreign populations is not discussed in this report. Specifically, this report contains information on the status of recovery plan development and overall population status for all listed species in the United States and a summary of the success of the recovery program to date.



Species: Wood stork
Listed As: Endangered
Population Status: Improving

JOHN & KAREN HOLLINGSWORTH

DAVID M'EWEN



Species: *Minnesota trout lily*
Listed As: *Endangered*
Population Status: *Uncertain*
VERA WONG

PROGRAM STATUS

Recovery Overview

Recovery, the ultimate purpose of the endangered species program, is the process by which the decline of an endangered or threatened species is arrested or reversed, or threats to its survival neutralized so that its long-term survival in nature can be ensured. The Act calls for the conservation of threatened and endangered species and the ecosystems upon which they depend and, ultimately, the recovery of listed species to levels where protection under the Act is no longer necessary. The Secretary of the Interior has delegated responsibility for endangered and threatened species recovery to the Service. The primary objectives of the Service's recovery program, while working in close cooperation with our partners, are to: (1) complete development of recovery plans within 2.5 years, to the maximum extent possible, (2) determine tasks necessary to reduce or eliminate the threats to the highest priority species, (3) apply available resources to the highest priority recovery tasks, and (4) reclassify and delist species as appropriate.

Section 4(f) of the Act calls for the development and implementation of recovery plans for species listed as endangered or threatened unless such plans would not contribute to their conservation. Recovery plans serve as blueprints for private, Federal, and State cooperation in the conservation of threatened and endangered species and the ecosystems on which they depend. As such, the plans must identify precise, measurable criteria to determine objectively when recovery has been achieved. Recovery planning may be done by the Service or may utilize the expertise of individuals from other Federal agencies, State personnel, or private contractors. The Service reviews outside work and may modify the draft plan as necessary to ensure consistency among plans, resolve disputes among recovery team members, and determine task priorities. Recovery plans must identify, to the extent possible, management tasks, recommended research needs, and other actions necessary to reach recovery plan goals. Recovery plans are reviewed periodically to determine whether revision of the plan is warranted. Strategies outlined in recovery plans may be modified when needed to incorporate new information and ensure that the species remains on the most effective path to recovery.

Coordination among Federal, State, and local agencies, conservation organizations, appropriate experts, and major land users is a key ingredient for effectively

implementing a recovery program. The recovery planning process is designed to allow potentially affected segments of the public to participate in planning and provide comments to facilitate coordination and plan acceptance. Importantly, such coordination allows the special local knowledge of affected communities to be fully considered. This understanding can serve to reduce or eliminate human use conflicts with listed species and their habitats. The Service recognizes that public support is vital to long-term survival and recovery of threatened and endangered species and the public is invited to provide comments on draft recovery plans. All comments are reviewed, to the extent possible, and addressed in the final plans.

Not all species have recovery plans. Some, such as the Little Kern golden trout, have recovery objectives outlined in State management plans that substitute as a recovery plan. Other species, such as Bachman's warbler and Scioto madtom, have not been sighted in several years and may be extinct. Recovery plan preparation is deferred for these species until individuals are found in the wild.

Recovery Policy

In July 1994, the Service and the National Marine Fisheries Service issued six joint policies regarding implementation of the Act (59 FR 34269-34275), four of which address some aspect of the recovery process. Of these four policies, the *Policy on Recovery Plan Participation and Implementation Under the Endangered Species Act* reiterates the requirement that plans be completed within 2.5 years of the species' listing date. It further requires that diverse expertise is represented on recovery teams; representatives of affected groups and stakeholders have the opportunity to participate in the planning process; social and economic impacts of implementing recovery actions be minimized; and multiple species plans be developed when possible.

The second policy, *Policy Regarding the Role of State Agencies in Endangered Species Act Activities*, requires the Service to solicit State agency expertise and participation in both the recovery planning and implementation processes. It also requires that the expertise and authority of State agencies be used in developing monitoring programs for recovered and delisted species.

The third policy, *Policy for the Ecosystem Approach to the Endangered Species Act*, addresses the need to take a cooperative approach focusing on groups of species dependent on the same ecosystem. It directs the Service to make group listing decisions where possible and to develop and implement recovery plans for multiple listed and candidate species. The policy also emphasizes the importance of integrating Federal, Tribal, State, and private efforts in cooperative, multi-species efforts under the Act.

The last policy, *Policy for Peer Review in Endangered Species Act Activities*, directs the Service to ensure that all actions taken under the Act are based on the best available scientific information. With regard to recovery, the policy directs that draft recovery plans be submitted for independent peer review to obtain all available scientific and commercial information, and to review

scientific data relating to selection or implementation of specialized tasks in draft recovery plans.

Recovery Implementation

The Director of the Service has delegated responsibility for recovery of listed species to the Service's seven Regional Directors across the nation. Each listed species is the responsibility of at least one Region. When the distribution of a species crosses regional boundaries, the lead Region coordinates decisions regarding the species among other appropriate Regions. Regional Directors determine whether recovery plans are needed, ensure that recovery plans are developed, appoint recovery team members, and direct recovery plan implementation. The boundaries of Service's Regions and the location of Regional Offices are illustrated on Map 1.



Species: *Gray bat*
Listed As: *Endangered*
Population Status: *Improving*

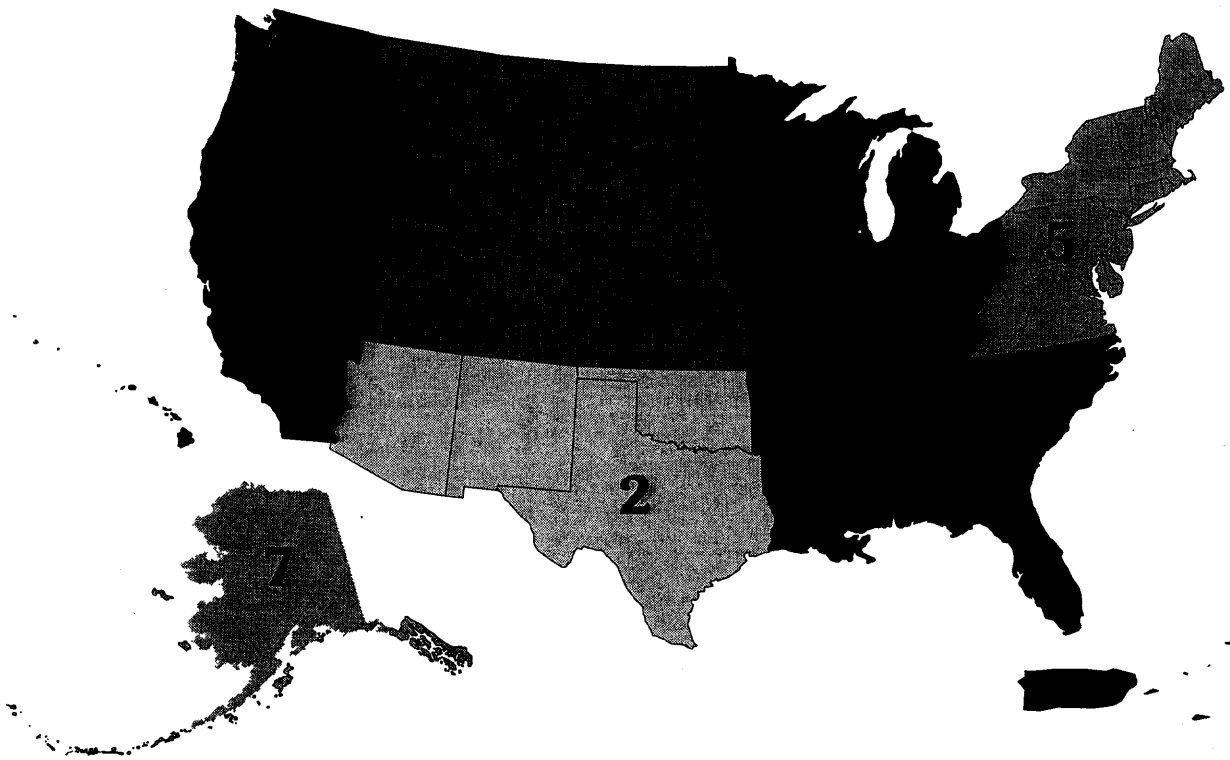
FWS PHOTO



Species: *Mead's milkweed*
Listed As: *Threatened*
Population Status: *Declining*

JOHN SCHWEGMAN

Regional Boundaries



Map 1: The Fish and Wildlife Service is comprised of seven Regions and a headquarters in Washington D.C. When the range of a species crosses Regional boundaries, a lead Region is designated to coordinate rangewide conservation activities.

Examples of Recovery Activities

The tools available for recovery of listed species are numerous and may include reintroduction of species into formerly occupied habitat, land acquisition, captive propagation, habitat restoration and protection, population assessments, research, and technical assistance for landowners and public education. All of these activities and associated efforts must allow time for an endangered species to respond biologically to protective efforts implemented on its behalf. Recovery activities conducted by the Service and its partners include: defining threats through research on biological requirements, managing threats through habitat protection and restoration, and achieving a stable or upward population trend for an endangered species.

The following examples illustrate the variety of recovery efforts conducted by the Service and recovery partners:

- ❖ the Aleutian Canada goose has benefitted from both habitat restoration and reintroduction into formerly occupied habitat;



Species: *Aleutian Canada geese*

Listed As: *Threatened*

Population Status: *Improving*

GEORGE GEE

- ❖ translocation of young bald eagles into formerly occupied habitat is one factor contributing significantly to bald eagle recovery;
- ❖ captive propagation has increased the numbers of the California condor and the red wolf;
- ❖ research on Peter's Mountain mallow, which revealed that the seeds require fire to germinate, has resulted in controlled burns that have dramatically increased the species' numbers;

- ❖ education efforts on behalf of the furbish lousewort have resulted in an enhanced conservation ethic, and conservation easements are being pursued for its habitat; and
- ❖ land acquisition and cooperation among the Service, National Aeronautics Space Administration, the National Park Service, private conservation foundations, and the State of Florida has made a major contribution to the recovery of the Florida scrub jay.

Cooperation with Others

Although Congress envisioned the Service as the leader in recovery of listed species, it recognized the role other Federal agencies, States, and private citizens should play. Recent examples of enhanced cooperation among Federal agencies include the January 1994 Memorandum of Understanding signed by the Service, Bureau of Land Management, National Park Service, Forest Service, and National Marine Fisheries Service on behalf of candidates for listing as threatened or endangered under the Act.

Candidate species conservation may reduce threats so that listing is no longer necessary, or reduce time and resources needed to achieve recovery once a species is listed. In September 1994, the Service and 13 other Federal agencies signed a second Memorandum of Understanding pledging cooperation toward the common goal of conserving listed species by protecting and managing their populations and the ecosystems upon which they depend.

The Federal Native Plant Conservation Memorandum of Understanding (MOU) (established May 25, 1994) has



Species: *Red wolf pups*

Listed As: *Endangered*

Population Status: *Improving*

TED SIMONS

been signed by nine agencies in three Federal departments (Department of Defense, Bureau of Land Management, Fish and Wildlife Service, National Biological Service, National Park Service, Office of Surface Mining Reclamation and Enforcement, Agricultural Research Service, Forest Service, and Natural Resources Conservation Service). The MOU's purpose is to ensure that native plant species and communities are maintained, enhanced, restored, or established on public lands, and that such activities are promoted on private lands. The MOU established the Federal Native Plant Conservation Committee to identify priority conservation needs for native plants and their habitats and coordinate implementation of programs for addressing those needs. Currently, 47 non-federal organizations have signed on as Cooperators to the Committee.

The MOU notes that plants constitute over half of the listed species in the United States, and that over 200 listed plants occur on Federal lands. As stated in the MOU, "Careful management of these lands can help maintain our Nation's plant heritage. Federal agencies also have the expertise to assist non-Federal land managers in plant conservation and protection efforts. Innovative partnerships are needed among public and private sectors...to conserve native plants and their habitats...." The 56 member and Cooperator agencies and organizations on the Committee form an ideal national partnership to promote plant recovery efforts.

This Committee is building partnerships, developing a strategic plan, coordinating regional and national working groups to address conservation actions, developing databases and information exchange networks, and coordinating education and public outreach opportunities. The overall goal is to mobilize agencies and organizations across the Nation into a cohesive force to support local and national habitat conservation efforts for plants, much as the Partners in Flight program is doing for neotropical migratory birds. The National Fish and Wildlife Foundation (on behalf of the Committee) has awarded the Bureau of Land Management a \$100,000 challenge grant to fund urgent conservation projects to benefit at-risk plant species and communities. These projects demonstrate the ability of the partner-ships to deliver on-the-ground results, including recovery of listed plant species.

The Partners in Flight program, which includes about 90 signatories from Federal and State agencies, non-governmental organizations, and industry, focusses attention on high priority species and ecosystems that can benefit both listed and candidate bird species. Partners in Flight has directed several projects towards restoring and managing western riparian habitats. Restoring the habitat

not only benefits the Southwestern willow flycatcher, but numerous other threatened species as well. Alliances like these can minimize the need to list species under the Act, since the threats to their continued existence can be alleviated before the species status becomes critical. The Service actively pursues partnerships with other Federal and State agencies, private organizations, and individuals. Examples include:

- ◆ Cheat Mountain salamander: Three quarters of the populations identified as necessary for recovery of the Cheat Mountain salamander are protected and managed through the cooperative efforts of the State of West Virginia, the Service, and the Forest Service.



Species: Cheat Mountain salamander

Listed As: Threatened

Population Status: Improving

- ◆ Mexican wolf: By the mid-1900s, the Mexican wolf had been completely eliminated from a portion of its historic range, the Southeast quadrant of Arizona. In the 1970s, the Arizona-Sonora Desert Museum in Tucson received four animals and launched a captive breeding program. By 1994, there were 92 animals, comprising 78 in 16 different United States facilities and 14 in 5 Mexican facilities.
- ◆ Pahump poolfish: The Pahump poolfish was listed as endangered in 1967. The primary threat has been the loss of springs due to a decline in underground water table levels. While poolfish no longer only occur in their historic location, Manse Spring, recovery efforts by Federal agencies, Nevada's State agencies, and university biologists have established secure populations in three other Nevada springs.

- ❖ Small whorled pogonia: Residential and commercial development has been the primary threat to the small whorled pogonia. But since the plant's listing, State and municipal conservation efforts and significant private landowner contributions have afforded permanent protection for the largest known population of this plant. Recovery successes have allowed it to be reclassified as threatened.
- ❖ Western prairie fringed orchid: Site protection through voluntary landowner agreements and other State efforts to protect and restore this species on State and private lands have helped to arrest the decline of this flower and stabilize its populations.



Species: Western prairie fringed orchid

Listed As: Threatened

Population Status: Stable

MARLIN BOWLES

Ecosystem Approach to Recovery

Recognizing that listed species that share common geographic locations may face similar threats, the Service investigates opportunities to combine conservation strategies for several listed, proposed, and candidate species into one recovery plan. A "multi-species" or "ecosystem" approach can improve the rate, fiscal efficiency, and effectiveness of recovery actions for listed

species, and may eliminate the need to list candidate species. Examples of recovery plans that address multiple listed species' recovery needs include:

- ❖ Maui-Molokai Forest Birds Plan—7 birds in Hawaii;
- ❖ Ash Meadows Recovery Plan—4 fishes, 1 insect, and 7 plants on the border of Nevada and California;
- ❖ California Channel Island Species Plan—4 plants, 2 birds, and 1 reptile in California;
- ❖ Pine-rockland Ecosystem Plan—5 plants in south Florida; and
- ❖ San Marcos River Ecosystem Plan—2 fishes, 1 amphibian, and 1 plant in Texas.

Taking ecosystem integrity into consideration when planning prelisting, listing, and recovery activities is of utmost importance in conserving biological diversity.

Relationship of Recovery to Other Sections of the Act

Coordination among Federal, State, and local agencies, academic researchers, conservation organizations, private individuals, and major land users is an essential ingredient in developing and implementing an effective recovery program. A summary of sections 6, 7, and 10 of the Act follows. These sections of the Act play an important role in the recovery of listed species.

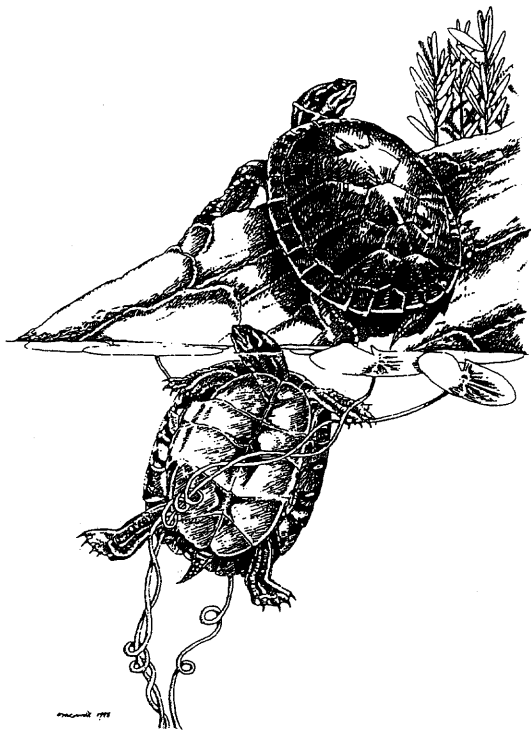
Section 6 (Cooperation with the States)

Section 6 of the Act authorizes the Secretary to enter into cooperative agreements with States that establish and maintain an adequate and active program for the conservation of endangered species. Those States are provided with financial assistance to support the development of programs for the conservation of endangered and threatened species and to monitor the status of candidate and recovered species. Up to 5 percent of the combined annual amounts of the Federal Aid in Wildlife and Sport Fish Restoration accounts can be appropriated annually to the Cooperative Endangered Species Conservation Fund and allocated to the States in accordance with subsection 6 (d) of the Act. The total appropriations for FY 1993 and FY 1994 for activities conducted under section 6 was \$6.565 and \$9.0 million respectively. The majority of recent grants have been used for implementation of recovery actions.

All 50 States, Puerto Rico, the Virgin Islands, and Guam are under cooperative agreements for animals. All but 11 of these entities are also under cooperative agreements for plants. States assist the recovery of endangered and threatened species and in monitoring the status of recovered species. Reimbursement can be up to 90 percent when two or more States have a common interest in conservation of one or more species.

These grants provide States with resources to participate in a wide array of recovery activities that include population assessments, habitat restoration, propagation, and reintroductions of listed species. States may also use section 6 grants to initiate conservation actions before a species is listed. Stabilization of candidate species and their habitats can often be accomplished in a more cost effective manner than through the process of listing, recovery planning and recovery implementation. A few examples of these grants are:

- ◆ In Massachusetts, section 6 funds were used by the Division of Fisheries and Wildlife to support nest protection and monitoring for the Plymouth redbelly turtle. These funds were also used to track survival of released turtles in the wild. The Massachusetts Division of Fisheries and Wildlife monitors population



Species: *Plymouth redbelly turtle*
Listed As: *Endangered*
Population Status: *Improving*

status and trends, searches for new occurrences, evaluates limiting factors, locates and protects nests, coordinates the headstarting program, reestablishes new populations, and conducts public information and education programs. Several of these tasks have



Species: *Black-footed ferret*
Listed As: *Endangered*
Population Status: *Improving*

FWS PHOTO

been conducted in conjunction with researchers at the Worcester State College and the University of Massachusetts, as well as the private sector. Through this cooperation, the population appears to be stable.

- ◆ Section 6 funds were provided to Wyoming, Montana, and South Dakota for their participation and involvement in the release of black-footed ferrets. The releases in South Dakota and Montana have been carefully monitored since release. In Montana there are five or six adults and two litters had at least four kits. In South Dakota there are three or four adults and two litters had a total of five kits. Releases in Wyoming are not planned because the release area was exposed to plague and the prey base has virtually disappeared.
- ◆ In Hawaii, section 6 funds were used to prevent the extinction of the Hawaiian crow through captive propagation and nest enhancement in the wild. Captive propagation was used to enhance the existing stocks and to increase the inhabited range of the Hawaiian crow through the release of additional captive-reared birds. A captive bird propagation facility has been completed on the island of Hawaii and although initially focusing on the Hawaiian crow, this facility will eventually assist with the recovery efforts for up to 17 endangered Hawaiian forest birds.

Section 7 (Interagency Cooperation)

Congress placed special responsibilities on all Federal agencies to ensure that the Federal government would not contribute to the extermination of species. Section 7(a)(1) of the Act clearly identifies the role Federal agencies play in recovery and directs them to use existing authorities to promote the conservation of listed species. These existing authorities include the National Forest Management Act of 1976 [16 U.S.C.A. 1601-1614], Multiple-Use Sustained Yield Act [16 U.S.C.A. 528-531], Federal Water Pollution Control Act Amendments of 1972 (i.e., the Clean Water Act) [22 U.S.C. 1251 et seq.], and the Federal Land Policy and Management Act [43 U.S.C. 1701 et seq.].

Responsibilities under section 7 of the Act fall into two categories. Under section 7(a)(1), Federal agencies are directed to use existing authorities to promote the conservation of listed species. Under section 7(a)(2), Federal agencies are precluded from authorizing, funding, or carrying out activities that are likely to jeopardize the continued existence of a listed species or destroy or adversely modify its critical habitat. Through consultation with the Service before initiating projects, the agencies review their actions to determine whether they could adversely affect listed species or habitat.

Section 7(a)(2) consultation may be either "informal" or "formal." Informal consultation provides an assessment of a proposed project to determine if formal consultation is required or if project modifications could be implemented that reduce or remove adverse impacts to the listed species. If an agency finds an action "may adversely affect" a listed species or designated critical habitat, formal consultation is required. Formal consultation results in a biological opinion outlining the Service's assessment of the proposed activity and its likely impact on the listed species. The Action agency may proceed with the action as proposed, provided no incidental take is anticipated. If incidental take is anticipated, the agency or the applicant must comply with the reasonable and prudent measures and implementing terms and conditions in the Service's incidental take statement to avoid liability from taking under the Act.

A General Accounting Office study of the Act and the implementation of section 7 found that over a 5-year period (1987-1991) the Service conducted 71,560 informal consultations with Federal agencies to assess the potential for impacts on listed species and critical habitat. Of these, 2,000 (or 2.8 percent) required formal consultation, and only 350 (or 0.5 percent) of those concluded that the Federal action would be likely to jeopardize listed species or adversely modify critical habitat. In all but 23 cases, the Service and Federal action

agencies were able to develop alternatives that allowed the actions to go forward while adequately protecting listed species or designated critical habitats. The 23 actions that were not undertaken due (in whole or in part) to listed species conflicts, represent less than 0.03 percent of all actions reviewed. Thus, over 99.97 percent of the projects were not "blocked" due to such conflicts. This success was largely due to informal cooperation between the Service and the Federal action agencies early in the planning process, allowing relatively minor adjustments to projects that decrease or remove any adverse impacts they may otherwise have on listed species. The cooperative spirit exhibited by many Federal agencies has contributed greatly to this record of success.

In addition to the determination of "jeopardy" or "no-jeopardy," the formal consultation process also provides a vehicle for recommending additional, discretionary conservation measures to Federal action agencies. Often drawing on tasks outlined in the implementation schedules of recovery plans, conservation actions appropriate to the Federal agency and the specific Federal action under review can be recommended in biological opinions. While not required, these actions provide a means whereby all Federal agencies can fulfill their section 7(a)(1) obligations to go beyond just ensuring that their actions do not jeopardize threatened or endangered species.

There are numerous instances where section 7 consultation has resulted in conservation benefits to listed and candidate species. For example:

- ✧ Through the consultation process, the Georgia Department of Transportation and the Coast Guard found methods to avoid injury and death of manatees by implementing protection measures on numerous bridge replacement projects along the coast.



Species: *West Indian manatee*
Listed As: *Endangered*
Population Status: *Declining*

JIM KRAUS

- ◇ Consultation with the Florida Gas Transmission Company resulted in an agreement upon construction time-frames that will allow for better protection for active bald eagle nests, scrub jays, gulf sturgeon, and gopher tortoises.



Species: Florida scrub jay
Listed As: Threatened
Population Status: Declining
 REED BOWMAN

- ◇ Through consultation, the only known habitat for the Warton's cave spider will be protected in central Texas. Protective measures include: gating the entrance of the cave; restricting the use of pesticides and fertilizers; and using native vegetation for landscaping near the cave.

All Federal agencies play a vital role in the conservation of listed and candidate species, and the Service makes a consistent effort to educate other Federal agencies and emphasizes the importance of the role they play in the conservation of the Nation's diverse natural resources.

Section 10(a)(1)(B) (Habitat Conservation Plans)

Section 10(a)(1)(B) allows the Service to issue permits for the "take" of federally listed species if the taking will be incidental to, and not the purpose of, an otherwise lawful activity. Congress intended that the section 10(a)(1)(B)

process be used to reduce conflicts between listed species and private development and to provide a framework that would encourage "creative partnerships" between the private sector and local, State, and Federal agencies in the interests of listed species and their habitat.

To obtain an "incidental take permit," an applicant must submit a Habitat Conservation Plan (HCP) that describes how the applicant will minimize and mitigate the impacts of the taking and how HCP implementation will be funded. An HCP allows development activities that impact threatened or endangered species in return for a conservation program implemented by the permittee that offsets those impacts or benefits the species. HCPs vary greatly in size and complexity, covering anywhere from a few acres to statewide efforts.

Recovery of listed species is not a direct requirement of the HCP process but is indirectly involved through the "no jeopardy" standard required by section 7(a)(2) of the Act and by the permit issuance criteria found at section 10(a)(2)(B). Under both these mandates, the Service must ensure that issuance of an incidental take permit does not "reduce appreciably the likelihood of the survival *and recovery* of the species in the wild." In other words, an HCP must not preclude or significantly reduce the recovery prospects of affected species. Nevertheless, though not a statutory requirement, many HCPs have a net positive affect on species recovery, and some substantially contribute to meeting recovery goals. This is especially true of HCPs that are range-wide or regional in scope because they provide long-term assurances of conservation actions and protection across large habitat areas. Recovery plans are often used to guide the crafting of HCPs. Thus, recovery is inherently an important consideration in any HCP. HCPs can significantly advance or even achieve recovery objectives.

The Service's role in the habitat conservation planning process is to provide technical assistance to the applicant during the HCP development phase, review the permit application and HCP, and issue the permit if all requirements have been satisfied. Examples of recently completed HCPs include the Simpson Timber Company HCP for the northern spotted owl in northern California (1992), the International Paper HCP for the Red Hills salamander in Alabama (1993), and the Metropolitan Bakersfield HCP for the San Joaquin kit fox and other species in California (1994). Each of these HCPs involves relatively large planning areas (30,000 to 380,000 acres) and allows economic activities (e.g., timber harvest or residential development) to proceed in endangered species habitat. However, each plan also requires that sufficient habitat be protected, through set-aside or acquisition, to offset project effects on listed species.



Species: Bald eagle chicks
Listed As: Threatened
Population Status: Improving
 JIM CARPENTER



Species: Black-footed ferret
Listed As: Endangered
Population Status: Improving
 LARRY SHANKS

HCPs currently under development include the Brevard County HCP in Florida (10,000 acres); HCPs for timber harvest activities in Georgia (1,000,000 acres), South Carolina (3,000,000 acres), North Carolina (300,000 acres), Mississippi (500,000 acres), Washington (3,000,000 acres), and Oregon (300,000 acres); Washington County HCP in Utah (135,000 acres); Balcones Canyonlands HCP in Travis County, Texas (633,000 acres); Kern County HCP in California's San Joaquin Valley (1,920,000 acres); several HCPs in southern California being developed jointly with the State's Natural Communities Conservation Planning (NCCP) Program; and the Clark County HCP in Nevada (22,500 acres).

Recovery Successes

Examples of Recovery Successes

There have been many successes of the recovery program; reclassifications, delistings, and significant steps toward achieving species recovery objectives. Highlights of a few of these successes are summarized below.

Bald eagle

This species formerly nested throughout North America. Population declines were attributed to habitat loss, illegal shooting, and the effects of DDT on reproductive success. In addition to the DDT ban, the eagle benefitted from nest site protection, aggressive habitat management, and reintroductions. Many States have successfully reestablished nesting populations by translocating young birds from areas with healthy populations into suitable, unoccupied habitat. Public awareness campaigns and vigorous law enforcement have helped to reduce illegal shooting of eagles. Bald eagle numbers in the lower 48 States have increased from approximately 417 nesting pairs in 1963 to more than 4,000 pairs in 1993. In addition, there are an estimated 5,000 to 6,000 juvenile bald eagles in this part of the range. As a result of the significant progress toward recovery, on July 12, 1994, the Service proposed to reclassify the bald eagle from endangered to threatened in all but four States. Subsequent action reclassified the species as threatened in all of the lower 48 states.

Black-footed ferret

A long history of prairie dog control programs reduced populations of the black-footed ferret by reducing the ferrets' preferred prey. Once thought to be extinct, black-footed ferrets were rediscovered in 1981 near Meeteetse, Wyoming. Canine distemper devastated that population in the late 1980s. A captive propagation program,

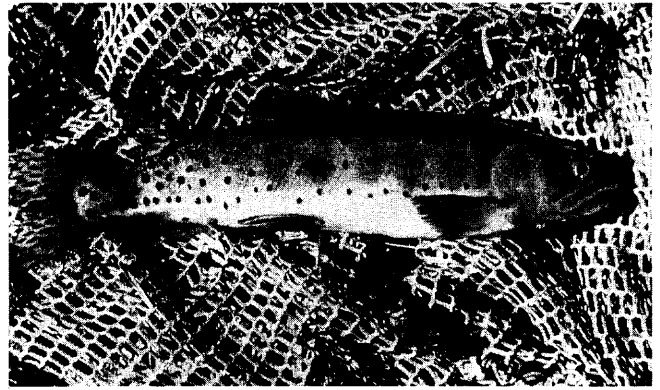
founded by the 18 survivors of this population, has been extremely successful, resulting in a population of over 400 by mid-1992. In the fall of 1991, 49 juvenile ferrets were released in the Shirley Basin area of southeast Wyoming as part of a nonessential experimental population. The release was the result of considerable landowner cooperation. About 55 percent of the management area where the ferrets were released is in private ownership. A similar release was conducted in north-central Montana and the Conata Basin/Badlands area of South Dakota in 1994. Releases continue at the Shirley Basin site in Wyoming, where the Service has confirmed at least 10 surviving ferrets and 6 young born in the wild resulting from the release. Releases of captive bred ferrets will continue in other States as new sites are identified and releases are coordinated with involved agencies and landowners.

Greenback cutthroat trout

Originally listed as endangered in 1967, the greenback cutthroat trout was reclassified as threatened in 1978. This native trout declined due to the introduction of nonnative rainbow, brook, and brown trout that out competed or hybridized with the greenback cutthroat trout in its native streams. At the time of its original listing, only two small historic populations were known to exist. Since then, the Service has restored the species in over 40 lakes and streams in and around Rocky Mountain National Park and other areas in Colorado. There is catch and release fishing for the species in 15 lakes, and a new captive broodstock is being established by the Colorado Division of Wildlife for future stocking. The species is nearing its recovery goals and, with continued reintroduction of the greenback cutthroat trout into its native streams and continued control of nonnative trout, the species may be delisted by the year 2000.

Haleakala Silversword

The Haleakala silversword is found only in a 250-acre area in the crater and on the outer slopes of Haleakala, Maui's largest volcano. Population declines were attributed to habitat disturbances, detrimental effects from introduced species, and vandalism. The Maui Chamber of Commerce felt so strongly about the declining populations that it petitioned Congress to intervene with efforts to save the species. As a result, the Haleakala National Park was established. Although the establishment of the park eliminated some of the threats, others continued and the silversword was listed in 1991. Now, the most dangerous threat to the plant is the loss of the localized, endemic pollinators. These pollinators are being threatened by the Argentine ant, a non-native species that preys on native insects. Biologists are currently working on an effective control for the ants, but have not

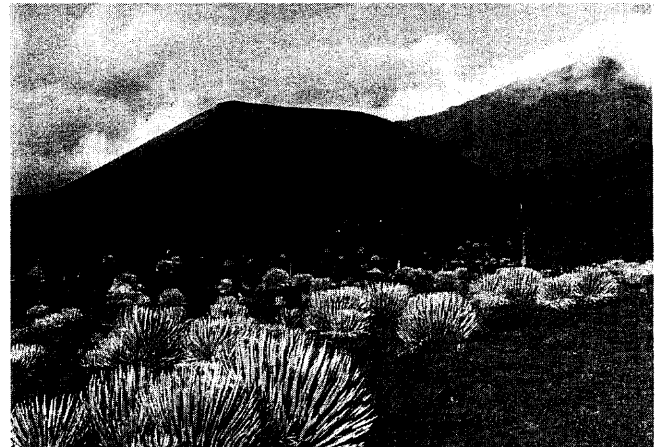


Species: Greenback cutthroat trout

Listed As: Threatened

Population Status: Improving

FWS PHOTO



Species: Haleakala silversword

Listed As: Threatened

Population Status: Stable

JOAN CANFIELD

been successful. A collaborative effort by the National Park Service and the Service has saved the Haleakala silversword from extinction.

Whooping Crane

The whooping crane is not believed to have been numerous prior to the development of the western United States and Canada. However, hunting, the conversion of the prairies to agriculture, and other human disturbances greatly reduced their numbers. More modern activities, such as dam and powerline construction along their principal migration route, and dredging in their principal wintering area, continue to result in deaths of individual whooping cranes or degrade their essential habitats. The Service, through whooping crane recovery partnerships with the Florida Game and Freshwater Fish Commission, the Canadian Wildlife Service, and the International Crane Foundation began the recovery process. Through the Partners for Wildlife program, the



Species: Whooping crane
Listed As: Endangered
Population Status: Improving

W.F. KUBICHEK

Service has helped restore whooping crane roosting habitat on the Platte River. This area serves as habitat for migrating whooping cranes, which prefer to roost in wide channels free of vegetation and other obstructions. Agreements have also been signed with the National Audubon Society and individual private landowners to clear trees and other vegetation from the channels, providing open habitat not only for the endangered whooping crane, but for sandhill cranes, shorebirds, and other migrating waterfowl as well. A captive propagation program has also been developed to reintroduce birds to the wild and now there are now more than 200 birds, which includes 122 held in captivity. Through these efforts, the whooping crane population continues to increase in North America. Several goals of the recovery plan have been implemented through these cooperative ventures, and the whooping cranes are closer to being recovered as a result.

American peregrine falcon

This widespread species occurs throughout much of North America. Population declines were attributed to habitat loss, illegal shooting, and the effects of DDT on reproductive success. The falcon has benefitted greatly from cooperative recovery efforts, such as the ban on pesticides (which caused thinning of falcon eggshells and adult mortality) and from the broad-based public involvement in the raising of thousands of falcons in captivity for their eventual reintroduction to the wild. Populations of the American peregrine falcon in southwestern Canada, the northern Rocky Mountain States, and the Pacific coast States were greatly depressed or extirpated. Over 3400 young American peregrine falcons were released to promote the species' recovery. These releases and many other recovery activities have helped to stabilize the falcon's population. The Service intends to propose removal of the American peregrine falcon from the list of threatened and endangered wildlife.

These, and many other species, have clearly benefitted from protection under the Act. With persistence and time, it is possible to make a u-turn on the road to extinction.

Monitoring Recovered Species

A species is considered "recovered" when the threats that initially led to a species' listing are corrected, when specified recovery goals (in terms of numbers, distribution, etc.) have been met, and when protection under the Act is no longer needed. Reaching recovery requires concerted efforts on the part of Federal and State authorities, as well as private parties.

The 1988 amendments to the Act recognized a potential conflict involving removal of just recovered species from the protective oversight of the Act. If a newly recovered species were no longer protected under the Act, the threats that led to its listing might resume and once again endanger the species. Section 4 of the Act was amended by adding a requirement that recovered species be monitored for at least 5 years after delisting. The Service cooperates with State agencies and other partners to accomplish monitoring for those species within State jurisdiction except in cases where the species are wide-ranging or migratory beyond State lines. In the event of a "significant risk to the well being" of any delisted species, the Secretary must use his emergency authority under section 4(b)(7) to relist the species.

Delistings and Reclassifications

Delisting (removing species from the List of Endangered and Threatened Wildlife and Plants) can occur for one of three reasons: (1) species extinction, (2) species recovery, or (3) more accurate scientific or commercial data becomes available. Delisting, resulting from successful recovery, is the culmination of a process involving planning recovery objectives, implementation of objectives, and evaluation and monitoring to ensure that all objectives have been met.

Reclassification from endangered to threatened is an intermediate step in the recovery process and signals significant success in an endangered species' recovery. The 1994 reclassification of the bald eagle represented over 20 years of coordinated efforts to reverse population declines, preserve habitat, and address pesticide contamination problems in the environment.

The Service is considering the species listed in table 2 for delisting or reclassification. In some cases, status surveys are underway to determine the appropriateness of these actions; in other cases, the Service has already determined appropriateness and is preparing proposals to carry out delisting or reclassification. While most of these reclassifications and delistings are a result of recovery having been achieved, some of these delistings and reclassifications are a result of taxonomic changes in the species' classification (e.g., cuneate bidens, Lloyd's hedgehog cactus) or discovery of additional secure populations (e.g., Maguire daisy). Others are a result of effective protection measures afforded to the species under the Act through the recovery process.

Table 2: Species Under Consideration for Delisting or Reclassification.

American Peregrine Falcon - western
Cui-ui
Eureka Valley plants
Hawaiian hawk
Loch Lomond coyote-thistle
MacFarlane's four-o'clock
Pahrump poolfish
Truckee barberry
Bald eagle
Cape Sable seaside sparrow
Inflated heelsplitter
Magazine Mountain shagreen
Slackwater darter
Robbins cinquefoil
Eskimo curlew

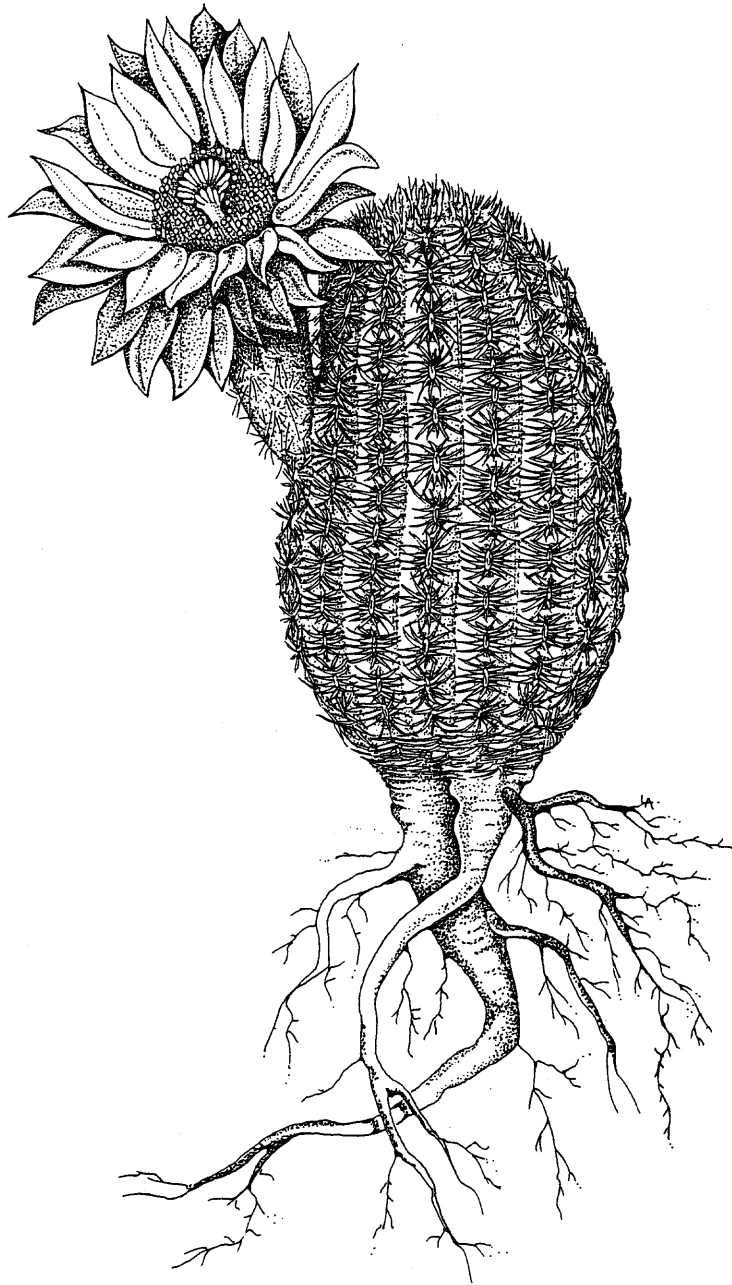


Species: American peregrine falcon

Listed As: Endangered

Population Status: Improving

FWS PHOTO



Species: *Black lace cactus*
Listed As: *Endangered*
Population Status: *Declining*

Analyses and Status of Listed Species

Recovery Program Analyses

Endangered Species Recovery Appropriations

Congressional funding authorizations to support the Service's recovery program have increased since the 1988 amendments. In FY 1993 and FY 1994, recovery represented approximately 31 percent of the Service's

total endangered species budget. Species with specific recovery activities funded as a result of Congressional directives, or activities funded as a Service directive, are presented in Table 3. These directives represented 55 percent and 35 percent of the total recovery appropriation in FY 1993 and FY 1994, respectively. Directives represent a substantial portion of the money available for implementing recovery and limit the money remaining for recovery actions benefitting other species.

**Table 3: Recovery Program Directives for
FY 1993 and 1994**

Fiscal Year 1993

\$ 77,000	Kirtland's warbler
\$ 450,000	Grizzly bear
\$ 377,000	Peregrine falcon
\$ 848,000	California condor
\$ 265,000	Sea turtles
\$ 339,000	Southern sea otter
\$ 681,000	Hawaiian birds
\$ 805,000	Rocky Mountain wolf (Animal Damage Control included)
\$ 680,000	Puerto Rican parrot
\$ 144,000	Cui-ui
\$ 340,000	Whooping crane
\$ 280,000	Black-footed ferret
\$ 74,000	Florida panther
\$ 435,000	West Indian manatee
\$ 395,000	Aleutian Canada goose
\$ 132,000	Bruneau hot springsnail
\$ 2,685,000	Northern spotted owl
\$ 286,000	Desert tortoise
\$ 665,000	Red wolf
\$ 624,000	Upper Colorado River fishes
\$ 297,000	Hawaiian species
\$ 91,000	Central Valley
\$ 296,000	Piping Plover
\$ 147,000	San Juan
\$ 154,000	Mexican grey wolf
\$ 297,000	Pacific Islands
\$ 30,000	Southeast fishes
\$11,894,000	TOTAL DIRECTIVES
\$ 20,065,000	TOTAL FY 1993 RECOVERY APPROPRIATION

Fiscal Year 1994

\$ 100,000	Kirtland's warbler
\$ 200,000	Grizzly bear
\$ 400,000	Peregrine falcon
\$ 600,000	California condor
\$ 300,000	Sea turtles
\$ 300,000	Southern sea otter
\$ 500,000	Hawaiian birds
\$ 600,000	Rocky Mountain wolf (Animal Damage Control included)
\$ 400,000	Whooping crane
\$ 300,000	Black-footed ferret
\$ 100,000	Florida panther
\$ 500,000	West Indian manatee
\$ 400,000	Aleutian Canada goose
\$ 2,000,000	Northern spotted owl
\$ 300,000	Desert tortoise
\$ 600,000	Red wolf
\$ 624,000	Upper Colorado River fishes
\$ 300,000	Pacific Islands
\$ 400,000	Mexican grey wolf
\$ 218,000	Steller's/Spectacled eider
\$ 100,000	Piping plover
\$ 450,000	Freshwater molluscs
\$ 200,000	San Juan
\$ 350,000	Mexican spotted owl
\$ 150,000	Edward's aquifer
\$10,392,000	TOTAL DIRECTIVES
\$ 29,550,000	TOTAL FY 1994 RECOVERY APPROPRIATION

Summary of the Status of Listed Species

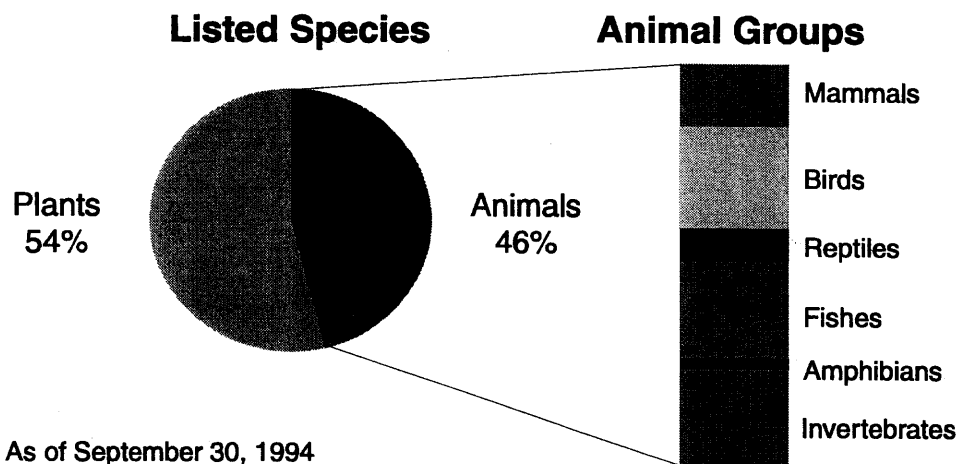
Figure 1 shows the percentage of listed species represented in the major taxonomic groups as of September 30, 1994. Map 2 shows the number of listed species in each State and Trust Territory as of September 30, 1994.

Figure 2 summarizes the status of 776 species listed as of 1993 through an analysis of the status and trends based on 5 year intervals. This figure shows the percent of

species, divided according to time of listing in 5 year intervals, that are known to be stable or improving, declining, or for which the population trend is uncertain. Stable or improving species are those for which the trend toward extinction has been halted or reversed in the wild.

Overall, the data on stable or increasing species illustrates that while recovery of listed species takes time it can be achieved. Just as the threats to these species accumulated through time to result in the precarious status seen for many species today, recovery also takes time.

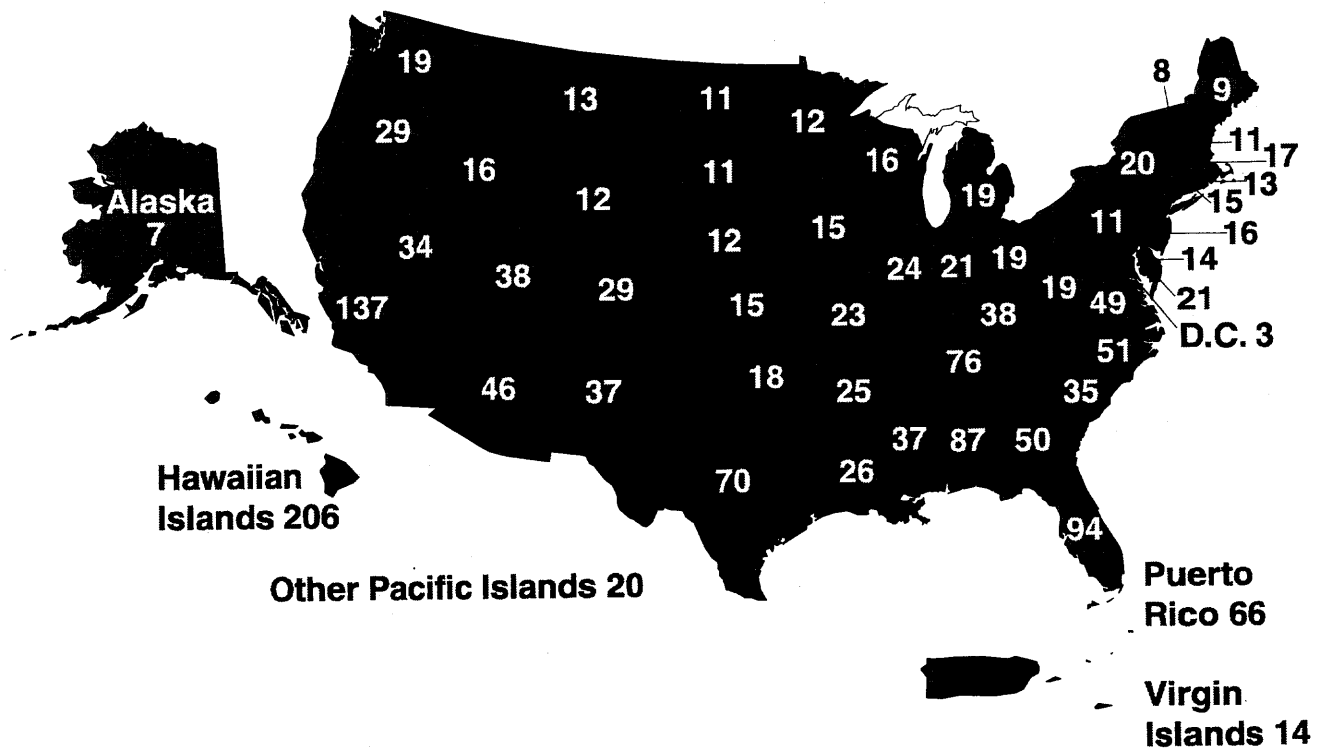
Figure 1. Distribution of Listed Species by Taxonomic Group



Listed Species by State/Territory

As of September 30, 1994

(Omits "similarity of appearance" and some extirpated species)



Map 2: Species listed under "similarity of appearance" and extinct species are not included in the totals identified.

The following definitions of population trend categories are useful in interpreting the data presented in figure 2:

Improving: species known to be increasing in numbers and/or whose threats to their continued existence are lessening in the wild.

Stable: species known to have stable numbers over the recent past and whose threats have remained relatively constant or diminished in the wild.

Declining: species known to be decreasing in numbers and/or whose threats to their continued existence are increasing in the wild.

Uncertain: species where additional survey work is required to determine the trend in their status.

Of the 108 species listed between 1968 and 1973, 58 percent are currently known to be stable or improving in their native habitats. Of the 294 species listed between 1989 and 1993, only 22 percent have recovered to the point that they are stable or increasing. For the species in decline or where population trends are uncertain, the Service and its partners in recovery are collecting biological information, developing recovery strategies, and implementing management activities that will stabilize the species and halt or reverse the trend toward extinction for many of these species.

The extraordinary success of the recovery program is demonstrated by the fact that even with a substantial increase in the number of species listed over the past decade, over 41 percent of the 909 species listed as of



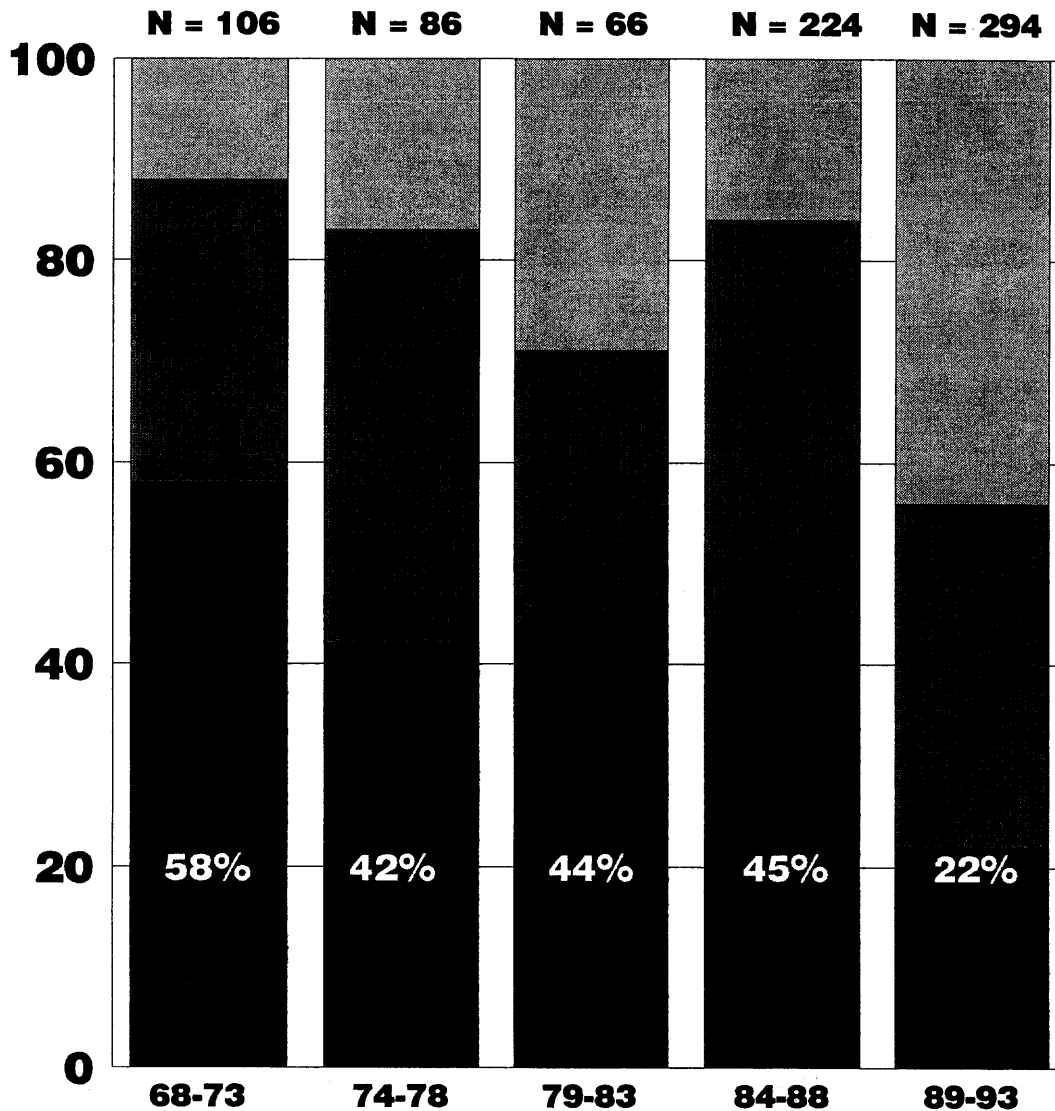
Species: *Houston toad*
Listed As: *Endangered*
Population Status: *Uncertain*

ROBERT THOMAS

September 30, 1994, have stabilized or are improving. This success is attributed to the efforts of the Service, other Federal agencies, States, tribal governments, and private individuals and organizations. Their efforts have similarly managed to hold those species with declining population trends to an overall average of 35 percent of total listed species. For some of these species, severely depressed populations may take a very long time to turn the corner toward recovery. For others, populations may have become so depressed or habitat so limited, that full recovery is not likely. Of all the species listed between 1968 and 1993, only 7, or less than 1 percent, have been officially recognized as extinct, and subsequently delisted. Several other species (e.g., Scioto madtom, Bachman's warbler) have not been located in a number of years and may also be extinct. These species will be delisted when supporting evidence is relatively conclusive. Though extinct species represent an irreplaceable loss to the biodiversity of our natural flora and fauna, the fact that almost 99 percent of listed species remain extant speaks to the success of the Act as a mechanism for conservation of species at risk of extinction. The percent of species for which the population trend is uncertain is indicated in the figure and, overall, there is an average of only 23 percent of listed species for which the population trend continues to be uncertain.

Figure 2 shows that the percent species increased noticeably within the past 10 years. The population trend of a species can remain uncertain for several reasons. In many cases, these species have not been listed for a sufficient period of time, and consequently their populations not monitored long enough, to establish clear information on population trend. Other species, including some that have been listed for many years, may have uncertain status as a result of their rarity, remoteness and/or inaccessibility of habitat, or significant, unmanageable threats to the species throughout its entire range. Rare Hawaiian rainforest birds, oceanic sea turtles, and subterranean salamanders are examples of species where inaccessibility of habitat may result in uncertain population trends. The status of the Houston toad remains uncertain as a result of its occurrence primarily on private lands where the Service lacks access to conduct population surveys. Still other species do not fit clearly into the population trend categories and their trend is listed as uncertain by default. As funding permits, the Service is conducting status surveys to determine the population trend for species where the trend is uncertain.

Summary of the Current Population Trends of Listed Species According to Time of Listing



Time of Listing in 5 Year Interval

- Percent of species stable or improving
- Percent of species declining
- Percent of species with an uncertain population trend

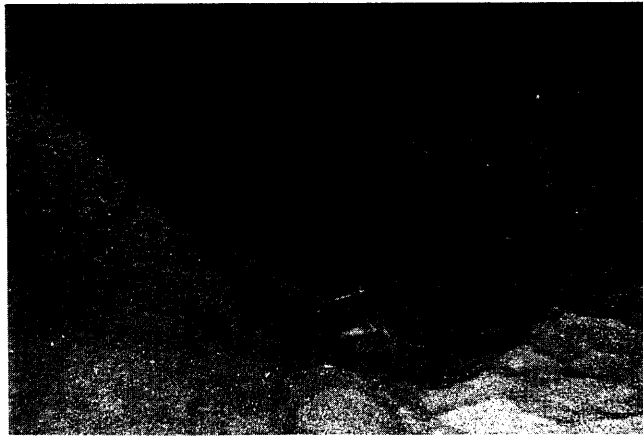
N = Number of species in the 5 year interval

Figure 2



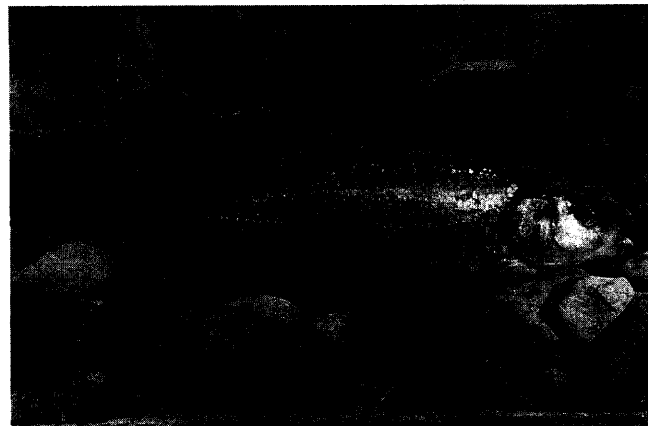
Species: *Knowlton cactus*
Listed As: *Endangered*
Population Status: *Stable*

PEGGY OLWELL



Species: *Green sea turtle*
Listed As: *Endangered*
Population Status: *Improving*

BLAIR WITHERINGTON

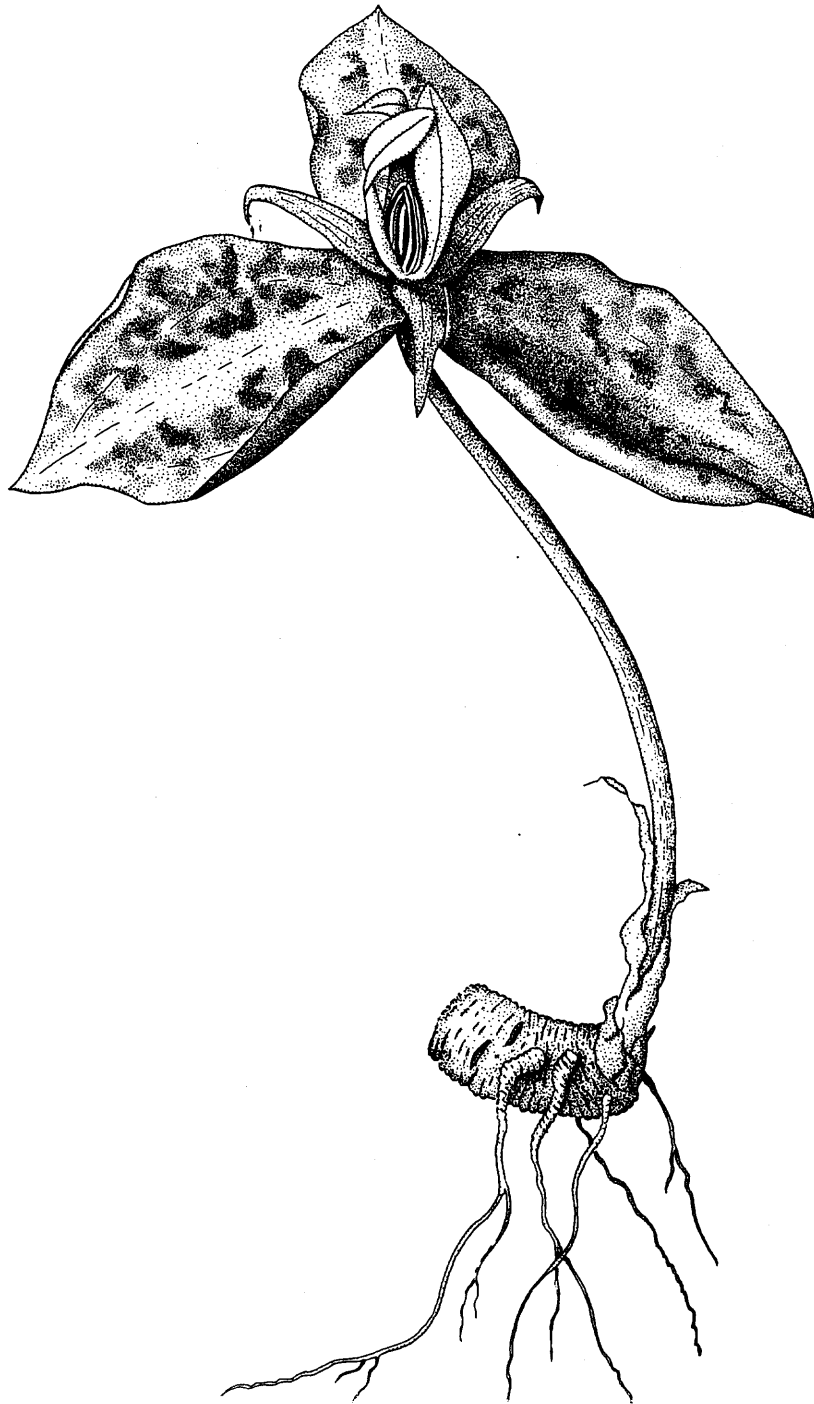


Species: *Yaqui chub*
Listed As: *Endangered*
Population Status: *Stable*

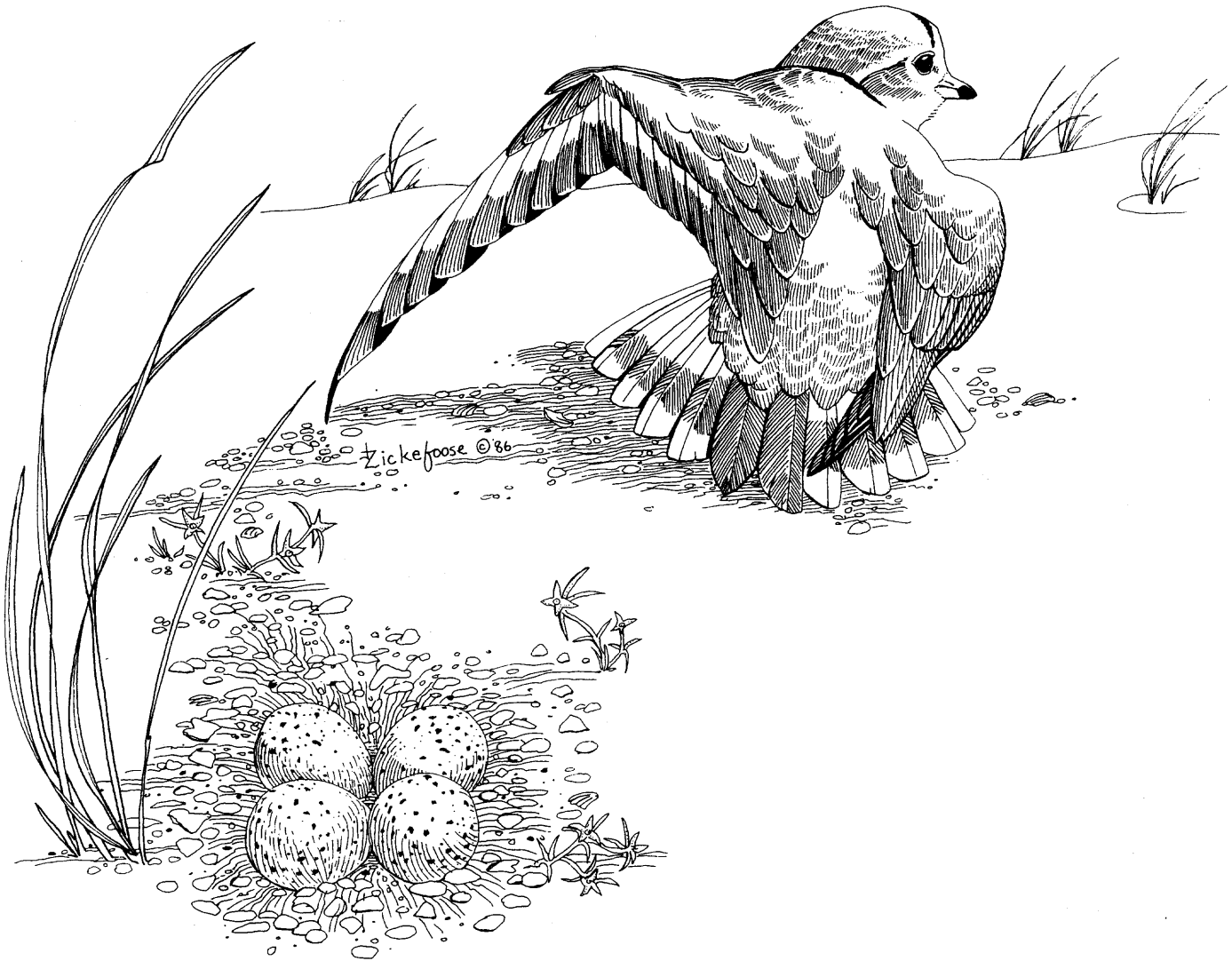
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Species-by-Species Status Summary

The status of all listed species under the Service's jurisdiction (United States and Trust Territories) as of September 30, 1994, has been summarized in the Appendix. As of September 30, 1994, 909 species were listed as endangered or threatened in the United States and Trust Territories. Of the 909, 893 are under the jurisdiction of the Fish and Wildlife Service. Of these 893 species, 484 (54 percent) had final approved recovery plans as of September 30, 1994, and another 185 (21 percent) have approved draft recovery plans. Two hundred eighty two of these species have been listed for less than 3 years. For the most part, species listed less than 3 years do not yet have approved recovery plans. Most do, however, have plans in some stage of development. There are 14 species for which the Service has determined that a recovery plan is not needed.



Species: *Relict trillium*
Listed As: *Endangered*
Population Status: *Declining*



Species: Pipinglover
Listed As: Endangered
Population Status: Declining

SUMMARY

Recovery of threatened and endangered species is among the most important tasks delegated to the Fish and Wildlife Service; it is also one of the most challenging. The decline of many of these plants and animals that are at the brink of extinction is usually the result of a long history of decreasing habitat quality and quantity. By the time many species are listed, they are critically close to being lost forever. Rarely, stabilizing the population and/or the remaining habitat is the most that can be done. In other instances, the Service and its partners in conservation are able to arrest and reverse the decline of species and re-establish them as functional components of their ecosystems. Recovery is achieved because of the protections and conservation mechanisms provided by the Act, and these successes are much celebrated by the American people. Through the continuation of these cooperative efforts, many more success stories will be realized, resulting in continued conservation of our Nation's natural heritage.

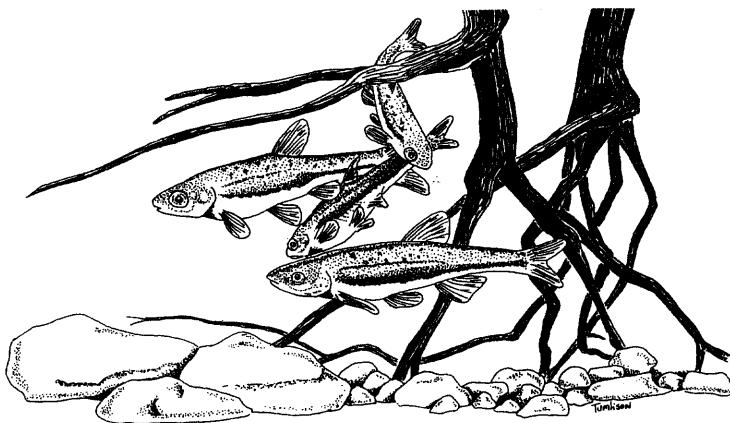
The greatest challenge is reversing long-term declines while finding innovative conservation and management actions that serve to both benefit the species and accommodate society's other goals, including economic growth. Fortunately, the Service and its partners have been largely successful in balancing these two challenges. In many cases the goals are directly linked, and it is being learned that achieving one facilitates the other. Sustaining economic growth in areas suffering chronic environmental declines is frequently impossible, and we recognize that

without a strong economy, a healthy environment and the benefits it provides will be lost.

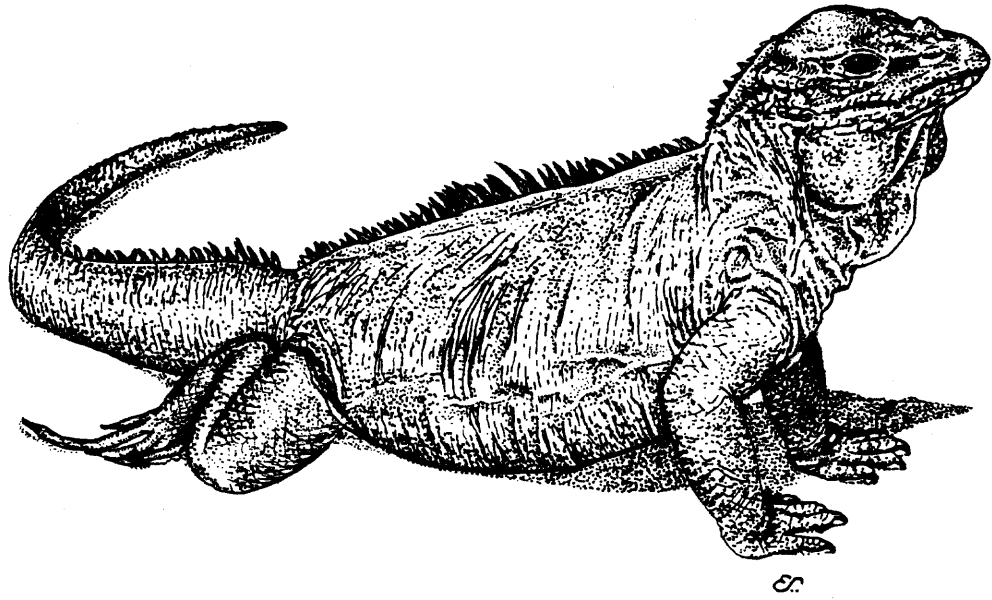
While there are many successes detailed in this report, much work remains to be done. Ultimately, recovery of listed species must be coordinated through partnerships aimed at conservation of the ecosystems upon which they depend, and such management actions must be carried out in the context of ongoing and anticipated human use.

Although it is sometimes pragmatic and necessary to address specific threats affecting individual species, we strive to avoid managing our lands and resources with a focus on one species only. To maintain a single species focus is to invite an endless progression of extinction crises. Rather, by managing at the ecosystem level, broad environmental gains can be secured and all species sharing those ecosystems will be benefitted.

The Fish and Wildlife Service and other agencies in the Department of the Interior are exploring ways that existing authorities may be used to prevent the degradation of ecosystems, which ultimately leads to endangered species listings and "last resort" recovery planning. The Department is committed to increasing its emphasis on ecosystem management, and will be making greater efforts to promote the partnerships essential for accomplishment of the important challenges facing us all.



Species: Blackside dace
Listed As: Threatened
Population Status: Stable



Species: Moná ground iguana
Listed As: Threatened
Population Status: Stable

APPENDIX

Data presented for each listed species includes: (1) the species' listing status; (2) lead Region; (3) population status; (4) whether or not the species has an approved recovery plan and, if not, whether one will be prepared; (5) the stage of the recovery plan, and (6) the percentage of the species' recovery objective(s) that have been met. The following information will be useful when interpreting the data in table 4.

(1) Species' Listing

The listing status is identified as threatened (**T**) or endangered (**E**). If critical habitat (**CH**) is designated, it is also listed in the table with the species' status.

(2) Lead Region

This indicates which Service Region has the lead responsibility for the species.

(3) Population Status (Pop. Status)

The status of each species is identified as **Improving (I)**, **Stable (S)**, **Declining (D)**, or **Uncertain (U)** as defined above. **Extinct (E)** species are those that are believed to be extinct in the wild.

(4) Recovery Plan (Rec. Plan)

This column indicate whether a recovery plan has been developed: **Y** for yes; **N** for no; and **NA** for non-applicable.

(5) Plan Stage

The status of recovery plan development is reported as indicated below.

F = Final-Approved

R = Revision-Approved (a numeral indicates the times revised)

D = Draft - published in the Federal Register

U = Under Development, planned or a draft not yet in *Federal Register*

RD = Revision-Under Development (a number indicates times revised)

NA = Not Applicable-Exempt

(6) Recovery Achieved

The percentage of species recovery objective(s) achieved is indicated with a value of 1 to 4 as defined below.

1 = 0-25 percent achieved

2 = 26-50 percent achieved

3 = 51-75 percent achieved

4 = 76-100 percent achieved

Recovery Priority as assigned according to species recovery priority system.

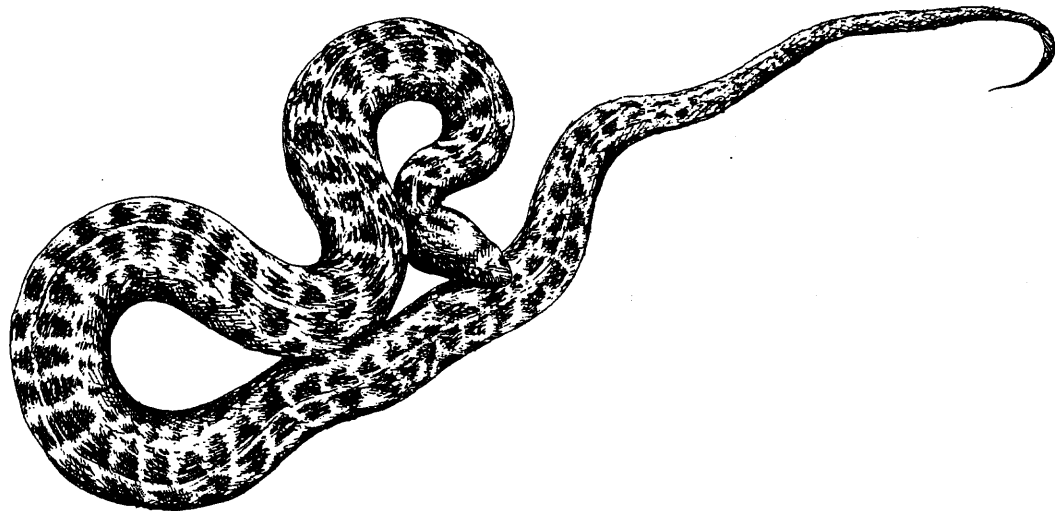
A species is assigned a recovery priority from 1 to 18 according to the degree of threats, recovery potential and taxonomic distinctness. In addition, a species' rank may be elevated by adding a C designation to its numerical rank to indicate that there is some degree of conflict between the species' conservation efforts and economic development associated with its recovery. Species with a high priority rank (1, 1C, 2, 2C) are those of most concern with highest potential for recovery. Species with a low rank (16, 17, 18) are of lowest concern or have low recovery potentials.



Species: Boulder darters

Listed As: Endangered

Population Status: Stable



Species: Concho water snake
Listed As: Threatened
Population Status: Stable

Listed Species	Listed As	Lead Region	Pop. Status	Rec. Plan	Plan Stage	Rec. Ach.	Rec. Prior.
<i>Mammals</i>							
Bat, gray	E	3	I	Y	F	3	8
Bat, Hawaiian hoary	E	1	U	N	U	1	9
Bat, Indiana	E,CH	3	D	Y	RD	2	8
Bat, lesser (=Sanborn's) long-nosed	E	2	U	Y	D	1	8
Bat, little Mariana fruit	E	1	E	Y	F	1	5
Bat, Mariana fruit	E	1	D	Y	F	1	3
Bat, Mexican long-nosed	E	2	U	Y	F	1	5
Bat, Ozark big-eared	E	2	S	Y	F	1	3
Bat, Virginia big-eared	E,CH	5	I	Y	RD(1)	3	9
Bear, grizzly or brown	T	6	S	Y	R(1)	2	3C
Bear, Louisiana black	T	4	I	N	D	1	9
Beaver, Point Arena mountain	E	1	U	N	U	1	3
Caribou, woodland	E	1	D	Y	R(3)	2	3C
Cougar, eastern	E	5	E	NA	F	1	18
Deer, Columbian white-tailed	E	1	I	Y	R(1)	4	15
Deer, Key	E	4	D	Y	R(1)	1	6C
Ferret, black-footed	E	6	I	Y	R(1)	1	2
Fox, San Joaquin kit	E	1	D	Y	RD	1	3C
Jaguarundi	E	2	U	Y	F	1	6
Manatee, West Indian (=Florida)	E,CH	4	D	Y	R(2)	1	5C
Mouse, Alabama beach	E,CH	4	I	Y	F	2	3C
Mouse, Anastasia Island beach	E	4	S	Y	F	1	6C
Mouse, Choctawahatchee beach	E,CH	4	U	Y	F	1	3C
Mouse, Key Largo cotton	E	4	S	Y	D	4	3C
Mouse, Pacific pocket	E	1	U	N	U	1	3C
Mouse, Perdido Key beach	E,CH	4	D	Y	F	2	3C
Mouse, salt marsh harvest	E	1	D	Y	RD	1	2C
Mouse, southeastern beach	T	4	D	Y	F	1	9C
Ocelot	E	2	D	Y	F	1	5
Otter, southern sea	T	1	I	Y	RD	1	9C
Panther, Florida	E	4	S	Y	R(1)	1	6C
Prairie dog, Utah	T	6	S	Y	F	2	14
Pronghorn, Sonoran	E	2	U	Y	F	1	3
Rabbit, Lower Keys marsh	E	4	D	Y	F	1	6C
Rat, Fresno kangaroo	E,CH	1	D	N	U	1	3C
Rat, giant kangaroo	E	1	D	N	U	2	2C
Rat, Morro Bay kangaroo	E,CH	1	D	Y	F	1	6C
Rat, rice (=silver rice)	E,CH	4	U	Y	U	1	9C
Rat, Stephens' kangaroo	E	1	S	N	U	2	2C
Rat, Tipton kangaroo	E	1	D	N	U	1	3C
Shrew, Dismal Swamp southeastern	T	5	I	Y	F	2	9
Squirrel, Carolina northern flying	E	4	S	Y	F	2	6C

Listed Species	Listed As	Lead Region	Pop. Status	Rec. Plan	Plan Stage	Rec. Ach.	Rec. Prior.
Squirrel, Delmarva Peninsula fox	E	5	I	Y	R(2)	2	9
Squirrel, Mount Graham red	E,CH	2	D	Y	F	1	9C
Squirrel, Virginia northern flying	E	5	I	Y	F	3	9
Vole, Amargosa	E,CH	1	D	Y	D	1	6
Vole, Hualapai Mexican	E	2	U	Y	F	1	3
Vole, Florida salt marsh	E	4	U	N	Exempt	1	6
Wolf, gray (two populations listed)	E,T,CH	3	I	Y	R(1)	4	14C
Wolf, Mexican gray	E	2	I	Y	F	1	3C
Wolf, Northern Rocky Mountain gray	E	6	I	Y	F	1	3C
Wolf, red	E	4	I	Y	R(2)	3	5C
Woodrat, Key Largo	E	4	S	Y	D	1	3C
Birds							
Akepa, Hawaii (honeycreeper)	E	1	S	Y	F	2	9
Akepa, Maui (honeycreeper)	E	1	D	Y	F	1	6
Akialoa, Kauai (honeycreeper)	E	1	U	Y	F	1	5
Akiapola'au (honeycreeper)	E	1	S	Y	F	2	2
Blackbird, yellow-shouldered	E,CH	4	S	Y	F	1	2C
Bobwhite, masked (quail)	E	2	I	Y	RD(2)	2	6
Broadbill, Guam	E	1	E	Y	F	1	5
Caracara, Audubon's crested	T	4	S	Y	F	1	12
Condor, California	E,CH	1	S	Y	RD	2	4C
Coot, Hawaiian (= 'alae-ke'oke'o)	E	1	S	Y	RD	3	15
Crane, Mississippi sandhill	E,CH	4	I	Y	R(3)	1	6C
Crane, whooping	E,CH	2	I	Y	R(2)	2	2C
Creeper, Hawaii	E	1	S	Y	F	2	8
Creeper, Molokai (=Kakawahie)	E	1	D	Y	F	1	5
Creeper, Oahu (honeycreeper)	E	1	U	N	U	1	5
Crow, Hawaiian (= 'alala)	E	1	I	Y	F	1	2
Crow, Mariana	E	1	D	Y	F	1	2
Crow, white-necked	E	4	U	N	NA	1	17
Curlew, Eskimo	E	7	U	N	U	1	5
Duck, Hawaiian (=koloa)	E	1	D	Y	R(1)	3	2
Duck, Laysan	E	1	D	Y	F	3	8
Eagle, bald (two separate listings)	E,T	3	I	Y	RD	4	14C
Eagle, bald (southwest)	E	2	S	Y	F	3	6C
Eider, spectacled	T	7	D	N	U	1	5
Falcon, American peregrine (western)	E	1	I	Y	RD	3	9
Falcon, Arctic peregrine	T	7	I	Y	F	4	9
Falcon, northern aplomado	E	2	U	Y	F	1	3
Finch, Laysan (honeycreeper)	E	1	S	Y	F	3	8
Finch, Nihoa (honeycreeper)	E	1	S	Y	F	3	8
Gnatcatcher, coastal California	T	1	D	N	U	1	3C

Listed Species	Listed As	Lead Region	Pop. Status	Rec. Plan	Plan Stage	Rec. Ach.	Rec. Prior.
Goose, Aleutian Canada	T	7	I	Y	R(2)	3	9
Goose, Hawaiian (=nene)	E	1	D	Y	F	2	2
Hawk, Hawaiian (=io)	E	1	S	Y	F	4	14
Hawk, Puerto Rican broad-winged	E	4	D	N	U	1	6
Hawk, Puerto Rican sharp-shinned	E	4	D	N	U	1	3
Honeycreeper, crested (=‘akohekohe)	E	1	S	Y	F	2	7
Jay, Florida scrub	T	4	D	Y	F	1	3C
Kingfisher, Guam Micronesian	E	1	S	Y	F	1	3
Kite, Everglade snail	E,CH	4	S	Y	R(4)	1	3C
Mallard, Mariana	E	1	E	NA	NA	1	5
Megapode, Micronesian (=LaPerouse’s)	E	1	U	N	U	1	8
Millerbird, Nihoa (Old world warbler)	E	1	S	Y	F	3	9
Monarch, Tinian (Old World flycatcher)	T	1	S	NA	NA	4	14
Moorhen (=gallinule), Hawaiian common	E	1	S	Y	R(1)	3	9
Moorhen (=gallinule), Mariana common	E	1	S	Y	F	1	9
Murrelet, marbled	T	1	D	N	U	1	3
Nightjar (=whip-poor-will), Puerto Rico	E	4	S	Y	F	2	5C
Nukupu‘u (honeycreeper)	E	1	D	Y	F	1	5
O‘o, Kauai (=‘o‘o ‘a‘a)(honeyeater)	E	1	D	Y	F	1	4
O‘u (honeycreeper)	E	1	D	Y	F	1	4
Owl, Mexican spotted	T	2	U	N	U	1	9C
Owl, northern spotted	T,CH	1	D	Y	D	1	9C
Palila (honeycreeper)	E,CH	1	S	Y	R(1)	3	1
Parrot, Puerto Rican	E	4	S	Y	R(1)	1	2
Parrotbill, Maui (honeycreeper)	E	1	S	Y	F	1	1
Pelican, brown	E	1	I	Y	F	4	9
Petrel, Hawaiian dark-rumped	E	1	S	Y	F	2	3
Pigeon, Puerto Rican plain	E	4	S	Y	F	1	3C
Plover, piping (3 populations)	E,T	3	D	Y	RD	1	5C
Plover, piping (Atlantic coast)	T	5	I	Y	RD(1)	3	2C
Plover, Western snowy (Pacific coast)	T	1	S	N	U	1	3C
Po‘ouli (honeycreeper)	E	1	D	Y	F	1	4
Prairie-chicken, Attwater’s greater	E	2	D	Y	R(1)	1	3
Rail, California clapper	E	1	D	Y	RD	1	3C
Rail, Guam	E	1	S	Y	F	1	2
Rail, light-footed clapper	E	1	S	Y	D	1	2
Rail, Yuma clapper	E	2	S	Y	F	3	6
Shearwater, Newell’s Townsend’s (=Manx,=‘a‘o)	T	1	S	Y	F	2	8
Shrike, San Clemente loggerhead	E	1	D	Y	F	1	9
Sparrow, Cape Sable seaside	E,CH	4	S	Y	F	2	12C
Sparrow, Florida grasshopper	E	4	D	Y	F	1	9
Sparrow, San Clemente sage	T	1	D	Y	F	2	9
Stilt, Hawaiian (=ae‘o)	E	1	S	Y	R(1)	1	9

Listed Species	Listed As	Lead Region	Pop. Status	Rec. Plan	Plan Stage	Rec. Ach.	Rec. Prior.
Stork, wood	E	4	I	Y	F	3	6C
Swiftlet, Mariana gray (=Vanikoro)	E	1	S	Y	F	1	9
Tern, California least	E	1	I	Y	RD	2	3C
Tern, least	E	3	I	Y	F	1	3C
Tern, roseate	E,T	5	S	Y	F	1	3
Thrush, large Kauai	E	1	D	Y	F	1	5
Thrush, Molokai (=oloma'o)	E	1	D	Y	F	1	6
Thrush, small Kauai	E	1	S	Y	F	1	5
Towhee, Inyo California (=brown)	T,CH	1	S	N	U	1	9C
Vireo, black-capped	E	2	D	Y	F	1	2C
Vireo, least Bell's	E,CH	1	I	Y	U	2	3C
Warbler (wood), Bachman's	E	4	U	NA	Exempt	1	5
Warbler (wood), golden-cheeked	E	2	D	Y	F	1	2C
Warbler (wood), Kirtland's	E	3	I	Y	R(1)	3	2C
Warbler (Old World), nightingale reed	E	1	S	N	U	1	9
White-eye, bridled	E	1	E	Y	F	1	6
Woodpecker, ivory-billed	E	4	E	NA	Exempt	1	18
Woodpecker, red-cockaded	E	4	D	Y	R(1)	1	8C

Reptiles

Alligator, American	T	4				Recovered	
Anole, Culebra Island giant	E,CH	4	U	Y	F	1	5
Boa, Mona	T,CH	4	U	Y	F	1	3
Boa, Puerto Rican	E	4	S	Y	F	1	14
Boa, Virgin Islands tree	E	4	U	Y	F	1	3C
Crocodile, American	E,CH	4	S	Y	R(1)	2	2C
Crocodile, saltwater (=estuarine)	E	1	U	Y	D	1	2C
Gecko, Monito	E,CH	4	U	Y	F	1	5
Iguana, Mona ground	T,CH	4	S	Y	F	2	3
Lizard, blunt-nosed leopard	E	1	D	Y	RD	1	2C
Lizard, Coachella Valley fringe-toed	T,CH	1	D	Y	F	2	2C
Lizard, Island night	T	1	I	Y	F	4	8
Lizard, St. Croix ground	E,CH	4	U	Y	F	1	2C
Rattlesnake, New Mexican ridge-nosed	T,CH	2	I	Y	F	1	3
Skink, bluetail (=blue-tailed) mole	T	4	D	Y	F	1	9
Skink, sand	T	4	D	Y	F	1	7
Snake, Atlantic salt marsh	T	4	D	Y	F	1	12
Snake, Concho water	T	2	S	Y	F	1	9C
Snake, eastern indigo	T	4	D	Y	F	1	12C
Snake, giant garter	T	1	U	N	U	1	2C
Snake, San Francisco garter	E	1	D	Y	F	1	3C
Tortoise, desert	T,CH	1	D	Y	F	1	8C
Tortoise, gopher	T	4	D	Y	F	1	9

Listed Species	Listed As	Lead Region	Pop. Status	Rec. Plan	Plan Stage	Rec. Ach.	Rec. Prior.
Turtle, Alabama red-bellied	E	4	U	Y	F	1	5
Turtle, flattened musk	T	4	S	Y	F	1	14
Turtle, green sea (2 populations)	E,T	2	I	Y	R(1)	1	1C
Turtle, hawksbill sea (=carey)	E,CH	2	U	Y	RD(1)	1	1C
Turtle, Kemp's (=Atlantic) ridley sea	E	2	I	Y	R(1)	1	2C
Turtle, leatherback sea	E,CH	2	U	Y	R(1)	1	7
Turtle, loggerhead sea	T	2	U	Y	R(1)	1	7C
Turtle, Plymouth redbelly (=red-bellied)	E,CH	5	I	Y	R(2)	2	9
Turtle, ringed map (=sawback)	T	4	S	Y	F	2	14
Turtle, yellow-blotched map (=sawback)	T	4	S	Y	F	1	14
Amphibians							
Coqui, golden	T,CH	4	D	Y	F	1	5C
Salamander, Cheat Mountain	T	5	I	Y	F	3	8
Salamander, desert slender	E	1	U	Y	F	1	8
Salamander, Red Hills	T	4	S	Y	F	1	7
Salamander, San Marcos	T,CH	2	U	Y	RD(1)	1	2C
Salamander, Santa Cruz long-toed	E	1	S	Y	R(1)	1	3
Salamander, Shenandoah	E	5	D	Y	F	1	8
Salamander, Texas blind	E	2	U	Y	D	1	5
Toad, Houston	E,CH	2	U	Y	RD(1)	1	5C
Toad, Puerto Rican crested	T	4	U	Y	F	1	2C
Toad, Wyoming	E	6	D	Y	F	1	3
Fishes							
Catfish, Yaqui	T,CH	2	D	Y	D	1	8
Cavefish, Alabama	E,CH	4	S	Y	R(2)	1	1
Cavefish, Ozark	T	4	I	Y	R(1)	2	8
Chub, bonytail	E,CH	6	D	Y	R(1)	1	5C
Chub, Borax Lake	E,CH	1	S	Y	F	2	5
Chub, Chihuahua	T	2	D	Y	F	1	2
Chub, humpback	E,CH	6	S	Y	R(2)	1	2C
Chub, Hutton tui	T	1	U	N	U	2	9
Chub, Mohave tui	E	1	D	Y	F	1	6C
Chub, Oregon	E	1	U	N	U	1	2
Chub, Owens tui	E,CH	1	S	Y	RD	1	6C
Chub, Pahrnagat roundtail (=bonytail)	E	1	S	Y	RD	1	3
Chub, slender	T,CH	4	D	Y	F	1	11
Chub, Sonora	T,CH	2	S	Y	F	1	11
Chub, spotfin (=turquoise shiner)	T,CH	4	U	Y	F	1	11
Chub, Virgin River	E	6	D	Y	D	1	3C
Chub, Yaqui	E,CH	2	S	Y	D	1	8
Cui-ui	E	1	I	Y	R(2)	2	2C

Listed Species	Listed As	Lead Region	Pop. Status	Rec. Plan	Plan Stage	Rec. Ach.	Rec. Prior.
Dace, Ash Meadows speckled	E,CH	1	S	Y	F	2	9
Dace, blackside	T	4	S	Y	F	1	11
Dace, Clover Valley speckled	E	1	U	N	U	1	9C
Dace, desert	T,CH	1	S	N	U	1	7C
Dace, Foskett speckled	T	1	U	N	U	2	9
Dace, Independence Valley speckled	E	1	U	N	U	1	6C
Dace, Kendall Warm Springs	E	6	S	Y	F	3	12
Dace, Moapa	E	1	S	Y	RD	2	1
Darter, amber	E,CH	4	S	Y	F	1	5
Darter, bayou	T	4	S	Y	R(1)	1	8C
Darter, bluemask (=jewel)	E	4	S	N	U	1	5
Darter, boulder (=Elk River)	E	4	S	Y	F	1	5
Darter, duskytail	E	4	D	Y	F	1	5
Darter, fountain	E,CH	2	U	Y	RD(1)	1	2C
Darter, goldline	T	4	D	N	D	1	8
Darter, leopard	T,CH	2	S	Y	RD(1)	2	11C
Darter, Maryland	E,CH	5	E	Y	R(1)	1	5
Darter, Niangua	T,CH	3	U	Y	F	1	8
Darter, Okaloosa	E	4	D	Y	F	1	11
Darter, relict	E	4	S	N	D	1	5
Darter, slackwater	T,CH	4	U	Y	F	1	8
Darter, snail	T	4	U	Y	R(1)	1	11
Darter, watercress	T	4	S	Y	R(2)	1	2
Gambusia, Big Bend	E	2	S	Y	F	2	2
Gambusia, Clear Creek	E	2	S	Y	F	2	2
Gambusia, Pecos	E	2	S	Y	F	2	2
Gambusia, San Marcos	E,CH	2	E	Y	F	1	2C
Goby, tidewater	E	1	D	N	U	1	7C
Logperch, Conasauga	E,CH	4	S	Y	F	1	5
Logperch, Roanoke	E	5	S	Y	F	1	5C
Madtom, Neosho	T	6	D	Y	F	1	11C
Madtom, pygmy	E	4	U	Y	F	1	5
Madtom, Scioto	E	3	U	NA	Exempt	1	5
Madtom, smoky	E,CH	4	S	Y	F	1	5
Madtom, yellowfin	T,CH	4	U	Y	F	1	11
Minnow, loach	T,CH	2	S	Y	F	1	4C
Minnow, Rio Grande Silvery	E	2	U	N	U	1	2C
Poolfish (=killifish), Pahump	E	1	S	Y	F	4	8
Pupfish, Ash Meadows Amargosa	E,CH	1	S	Y	F	2	9
Pupfish, Comanche Springs	E	2	D	Y	F	1	2
Pupfish, desert	E,CH	2	S	Y	F	1	5
Pupfish, Devil's Hole	E	1	S	Y	R(1)	2	8
Pupfish, Leon Springs	E,CH	2	S	Y	F	2	2

Listed Species	Listed As	Lead Region	Pop. Status	Rec. Plan	Plan Stage	Rec. Ach.	Rec. Prior.
Pupfish, Owens	E	1	S	Y	RD	1	5
Pupfish, Warm Springs	E	1	S	Y	R(1)	2	9
Sculpin, pygmy	T	4	S	Y	F	1	8
Shiner, beautiful	T,CH	2	D	Y	D	1	2
Shiner, blue	T	4	D	Y	D	1	8
Shiner, Cahaba	E	4	D	Y	F	1	2
Shiner, Cape Fear	E,CH	4	S	Y	F	1	5
Shiner, Palezone	E	4	S	N	U	1	5
Shiner, Pecos bluntnose	T,CH	2	U	Y	F	1	3
Silverside, Waccamaw	T,CH	4	S	Y	F	1	8
Smelt, delta	T	1	D	N	U	1	2C
Spikedace	T,CH	2	S	Y	F	1	4C
Spinedace, Big Spring	T,CH	1	U	Y	F	1	12
Spinedace, Little Colorado	T,CH	2	D	Y	D	1	2
Spinedace, White River	E,CH	1	D	Y	F	1	2C
Springfish, Hiko White River	E,CH	1	S	N	U	1	3C
Springfish, Railroad Valley	T,CH	1	S	N	D	1	2C
Springfish, White River	E,CH	1	S	N	U	1	3C
Squawfish, Colorado	E,CH	6	S	Y	R(1)	1	2C
Stickleback, unarmored threespine	E	1	S	Y	R(1)	1	3
Sturgeon, Gulf	T	4	U	Y	D	1	12
Sturgeon, pallid	E	6	D	Y	F	1	2C
Sucker, June	E,CH	6	D	N	U	1	5C
Sucker, Lost River	E	1	D	Y	F	1	1C
Sucker, Modoc	E,CH	1	D	NA	NA	1	5
Sucker, razorback	E,CH	6	D	N	U	1	5C
Sucker, shortnose	E	1	D	Y	F	1	2C
Sucker, Warner	E,CH	1	D	Y	D	1	2C
Topminnow, Gila	E	2	D	Y	F	2	2
Topminnow, Yaqui	E	2	D	Y	RD(1)	2	2
Trout, Apache (=Arizona)	T	2	S	Y	RD(2)	2	8
Trout, Gila	E	2	S	Y	R(2)	2	2
Trout, greenback cutthroat	T	6	I	Y	RD(2)	3	15
Trout, Lahontan cutthroat	T	1	D	Y	D	1	9
Trout, Little Kern golden	T,CH	1	S	NA	NA	2	9
Trout, Paiute cutthroat	T	1	D	Y	F	1	9
Woundfin	E	6	D	Y	RD(2)	1	1C
Snails							
Ambersnail, Kanab	E	6	D	N	U	1	6C
Limpet, Banbury Springs	E	1	S	Y	D	1	8
Riversnail, Anthony's	E	4	S	N	U	1	5
Shagreen, Magazine Mountain	T	4	S	Y	F	1	8

Listed Species	Listed As	Lead Region	Pop. Status	Rec. Plan	Plan Stage	Rec. Ach.	Rec. Prior.
Snail, Bliss Rapids	T	1	D	Y	D	1	8
Snail, Chittenango ovate amber	T	5	D	Y	RD(1)	1	5
Snail, flat-spined three-toothed (land)	T	5	S	Y	F	2	5
Snail, Iowa Pleistocene	E	3	U	Y	F	2	14
Snail, noonday	T	4	S	Y	F	1	9
Snail, painted snake coiled forest	T	4	U	Y	F	1	8
Snail, royal (=obese)	E	4	S	Y	D	1	5
Snail, Snake River physa	E	1	D	Y	D	1	5
Snail, Stock Island tree	T	4	D	Y	F	1	3
Snail, tulotoma (=Alabama live-bearing)	E	4	S	N	D	1	5
Snail, Utah valvata	E	1	S	Y	D	1	5
Snail, Virginia fringed mountain	E	5	S	Y	F	1	4
Snails, Oahu tree	E	1	D	Y	F	1	2
Springsnail, Alamosa	E	2	I	Y	F	1	14
Springsnail, Idaho	E	1	D	Y	D	1	5
Springsnail, Socorro	E	2	S	Y	F	1	14

Clams

Acornshell, southern	E	4	D	N	D	1	5
Clubshell	E	5	D	Y	F	1	11
Clubshell, black (=Curtus' mussel)	E	4	D	Y	F	1	5C
Clubshell, ovate	E	4	D	N	D	1	5
Clubshell, southern	E	4	D	N	D	1	5
Combshell, southern (=penitent mussel)	E	4	D	Y	F	1	2C
Combshell, upland	E	4	D	N	D	1	5
Fanshell	E	4	D	Y	F	1	5
Fatmucket, Arkansas	T	4	U	Y	F	1	8
Heelsplitter, Carolina	E	4	D	N	D	1	5
Heelsplitter, inflated	T	4	D	Y	F	1	8C
Kidneyshell, triangular	E	4	D	N	D	1	5
Moccasinshell, Alabama	T	4	D	N	D	1	8
Moccasinshell, Coosa	E	4	D	N	D	1	5
Mucket, orange-nacre	T	4	D	N	D	1	8
Mussel, dwarf wedge	E	5	D	Y	F	1	5
Mussel, ring pink (=golf stick pearly)	E	4	D	Y	F	1	5
Mussel, winged mapleleaf	E	3	U	Y	D	1	2C
Pearlshell, Louisiana	T	4	U	Y	F	2	8
Pearly mussel, Alabama lamp	E	4	D	Y	F	1	5
Pearly mussel, Appalachian monkeyface	E	4	D	Y	F	1	5
Pearly mussel, birdwing	E	4	D	Y	F	1	4C
Pearly mussel, cracking	E	4	D	Y	F	1	4
Pearly mussel, Cumberland bean	E	4	D	Y	F	1	5C
Pearly mussel, Cumberland monkeyface	E	4	D	Y	F	1	5C
Pearly mussel, Curtis'	E	3	D	Y	F	1	6

Listed Species	Listed As	Lead Region	Pop. Status	Rec. Plan	Plan Stage	Rec. Ach.	Rec. Prior.
Pearly mussel, dromedary	E	4	D	Y	F	1	4C
Pearly mussel, green-blossom	E	4	D	Y	F	1	6
Pearly mussel, Higgins' eye	E	3	U	Y	F	2	2C
Pearly mussel, little-wing	E	4	D	Y	F	1	4
Pearly mussel, orange-footed (=pimple back)	E	4	D	Y	F	1	5
Pearly mussel, pale lilliput	E	4	D	Y	F	1	5
Pearly mussel, pink mucket	E	4	D	Y	F	1	5
Pearly mussel, purple cat's paw	E	4	D	Y	F	1	6
Pearly mussel, tubercled-blossom	E	4	E	Y	F	1	6
Pearly mussel, turgid-blossom	E	4	E	Y	F	1	5
Pearly mussel, white cat's paw	E	3	D	Y	F	1	6C
Pearly mussel, white wartyback	E	4	D	Y	F	1	5
Pearly mussel, yellow-blossom	E	4	E	Y	F	1	6
Pigtoe, flat (=Marshall's mussel)	E	4	D	Y	F	1	5
Pigtoe, heavy (=Judge Tait's mussel)	E	4	D	Y	F	1	5C
Pigtoe, Cumberland	E	4	D	Y	F	1	5
Pigtoe, dark	E	4	D	N	D	1	5
Pigtoe, fine-rayed	E	4	D	Y	F	1	5
Pigtoe, rough	E	4	D	Y	F	1	5
Pigtoe, shiny	E	4	D	Y	F	1	5
Pigtoe, southern	E	4	D	N	D	1	5
Pocketbook, fat	E	4	I	Y	R(1)	2	2C
Pocketbook, fine-lined	T	4	D	N	D	1	8
Pocketbook, speckled	E	4	U	Y	F	1	5
Riffleshell, northern	E	5	D	Y	F	1	12
Riffleshell, tan	E	4	D	Y	F	1	5
Rock-pocketbook, Ouachita (=Wheeler's pearly mussel)	E	2	D	Y	D	1	4C
Spinymussel, James River (=Virginia)	E	5	D	Y	F	1	5
Spinymussel, Tar River	E	4	D	Y	R(1)	1	5
Stirrupshell	E	4	D	Y	F	1	5
Crustaceans							
Amphipod, Hay's Spring	T	5	S	NA	Exempt	3	5
Crayfish, cave (=Cambarus aculabrum)(NCN)	E	4	U	N	U	1	5
Crayfish, cave (NCN)	E	4	S	Y	F	1	5
Crayfish, Nashville	E	4	U	Y	R(1)	1	11C
Crayfish, Shasta (=placid)	E	1	U	N	U	1	5
Isopod, Lee County Cave	E	5	S	N	NA	1	8
Isopod, Madison Cave	T	5	S	N	NA	2	4
Isopod, Socorro	E	2	S	Y	F	4	2
Shrimp, Alabama cave	E	4	D	N	U	1	5
Shrimp, California freshwater	E	1	U	N	U	1	8C
Shrimp, Conservancy fairy	E	1	U	N	U	1	8

Listed Species	Listed As	Lead Region	Pop. Status	Rec. Plan	Plan Stage	Rec. Ach.	Rec. Prior.
Beauty, Harper's	E	4	I	Y	F	1	7
Bellflower, Brooksville (=Robin's)	E	4	U	Y	F	1	8
Bidens, cuneate	E	1	NA	NA	NA	NA	NA
Birch, Virginia round-leaf	E	5	I	Y	R(2)	3	8
Bird's-beak, palmate bracted	E	1	I	N	U	1	2C
Bird's-beak, salt marsh	E	1	S	Y	F	1	6
Birds-in-a-nest, white	T	4	U	Y	F	1	8
Bittercress, small-anthered	E	4	D	Y	F	1	5
Bladderpod, Dudley Bluffs	T	6	S	Y	F	1	14
Bladderpod, kodachrome	E	6	S	N	U	1	14
Bladderpod, lyrate	T	4	S	N	U	1	8
Bladderpod, Missouri	E	3	I	Y	F	3	8
Bladderpod, San Bernardino Mountains	E	1	S	N	U	1	9
Bladderpod, white	E	2	D	Y	F	1	8
Blazing-star, Ash Meadows	T,CH	1	U	Y	F	2	8
Blazing-star, Heller's	T	4	I	Y	F	2	8
Blazing-star, scrub	E	4	D	Y	F	2	2
Blue-star, Kearney's	E	2	U	Y	F	1	2
Bluegrass, Hawaiian	E	1	U	Y	D	1	2
Bluet, Roan Mountain	E	4	D	Y	D	1	6
Bonamia, Florida	T	4	I	Y	F	3	8
Boxwood, Vahl's	E	4	D	Y	F	1	5
Broom, San Clemente Island	E	1	I	Y	F	4	9
Buckwheat, clay-loving wild	E,CH	6	U	Y	F	1	5
Buckwheat, Cushenbury	E	1	S	N	U	1	9
Buckwheat, gypsum wild	T,CH	2	U	Y	F	1	8
Buckwheat, scrub	T	4	D	N	U	1	15
Buckwheat, steamboat	E	1	D	N	U	1	3
Bulrush, northeastern (=barbed bristle)	E	5	I	Y	F	3	2C
Bush-clover, prairie	T	3	I	Y	F	2	8
Bush-mallow, San Clemente Island	E	1	I	Y	F	3	8
Buttercup, autumn	E	6	D	Y	F	1	6
Butterwort, Godfrey's	T	4	S	Y	D	1	14
Button, Mohr's Barbara	E	4	I	Y	F	1	14
Button-celery, San Diego	E	1	U	N	U	1	3C
Cactus, Arizona hedgehog	E	2	U	Y	D	1	3
Cactus, Bakersfield	E	1	D	N	U	1	2
Cactus, black lace	E	2	D	Y	F	1	3
Cactus, Brady pincushion	E	2	U	Y	F	1	2
Cactus, bunched cory	T	2	D	Y	F	1	8
Cactus, Chisos Mountain hedgehog	T	2	D	Y	F	1	9
Cactus, Cochise pincushion	T	2	U	Y	F	1	8
Cactus, Davis' green pitaya	E	2	D	Y	F	1	3

APPENDIX Species Status Summary

Plants

Listed Species	Listed As	Lead Region	Pop. Status	Rec. Plan	Plan Stage	Rec. Ach.	Rec. Prior.
Cactus, Key tree	E	4	S	Y	F	3	5C
Cactus, Knowlton	E	2	S	Y	F	2	2
Cactus, Kuenzler hedgehog	E	2	S	Y	F	1	3
Cactus, Lee pincushion	T	2	S	Y	F	2	3
Cactus, Lloyd's hedgehog	E	2	U	NA	Exempt	1	8
Cactus, Lloyd's Mariposa	T	2	D	Y	F	1	2
Cactus, Mesa Verde	T	2	S	Y	F	1	8C
Cactus, Nellie cory	E	2	D	Y	F	1	2
Cactus, Nichol's Turk's head	E	2	U	Y	F	1	3
Cactus, Peebles Navajo	E	2	U	Y	F	1	3
Cactus, Pima pineapple	E	2	U	N	U	1	3
Cactus, San Rafael	E	6	D	N	U	1	5C
Cactus, Siler pincushion	T	2	U	Y	F	2	8
Cactus, Sneed pincushion	E	2	D	Y	F	2	9
Cactus, star	E	2	U	N	U	1	2
Cactus, Tobusch fishhook	E	2	D	Y	F	1	2
Cactus, Uinta Basin hookless	T	6	S	Y	F	3	8
Cactus, Wright fishhook	E	6	S	Y	F	3	8
Calyptanthus thomasiana (NCN)	E	4	D	N	U	1	11
Campion, fringed	E	4	D	N	U	1	8
Capa, Rosa (=pendula cimarrona)	E	4	D	Y	D	1	11
Cat's-eye, Terlingua Creek	E	2	U	Y	F	1	5C
Catchfly, Perlman's	E	1	U	Y	D	1	2
Centauray, spring-loving	T,CH	1	S	Y	F	2	8
Chaff-flower, round-leaved	E	1	D	Y	D	1	3
Chaffseed, American	E	5	S	N	D	1	7
Chamaecrista glandulosa var. mirabilis (NCN)	E	4	D	Y	F	1	2
Chamaesyce halemanui (NCN)	E	1	U	Y	D	1	2
Chamaesyce skottsbergii var. kalaeloana (NCN)	E	1	S	Y	D	1	9
Checker-mallow, Nelson's	T	1	D	N	U	1	8C
Checker-mallow, pedate	E	1	D	N	U	1	5C
Chumbo, higo	T	4	S	NA	NA	1	14
Cinquefoil, Robbins'	E,CH	5	S	Y	F	4	2
Cladonia, Florida perforate	E	4	S	N	U	1	2
Cliff-rose, Arizona	E	2	U	Y	D	1	2
Clover, running buffalo	E	3	I	Y	F	2	2
Cobana, Negra	T	4	S	N	U	1	5
Coneflower, smooth	E	4	D	Y	D	1	5
Coneflower, Tennessee purple	E	4	S	Y	R(1)	2	8
Coyote-thistle, Loch Lomond	E	1	S	NA	NA	4	14
Cranichis ricartii (NCN)	E	4	D	NA	NA	1	5
Cress, toad-flax (=shrubby reed-mustard)	E	6	D	Y	F	1	10C

Listed Species	Listed As	Lead Region	Pop. Status	Rec. Plan	Plan Stage	Rec. Ach.	Rec. Prior.
Cycladenia, Jones	T	6	S	N	U	1	9
Cypress, Santa Cruz	E	1	S	N	U	1	2
Daisy, lakeside	T	3	S	Y	F	2	6C
Daisy, Maguire	E	6	S	Y	D	4	6
Daisy, Parish's	T	1	D	N	U	1	8
Daphnopsis hellerana (NCN)	E	4	D	Y	F	1	5
Dawn-flower (=bitterweed), Texas prairie	E	2	D	Y	F	1	8C
Delissea rhytidosperra (NCN)	E	1	U	Y	D	1	2
Desert-parsley (=lomatium), Bradshaw's	E	1	I	Y	F	1	8
Diablo, pelos del	E	4	D	Y	F	1	5C
Diellia falcata (NCN)	E	1	U	Y	D	1	11
Diellia pallida (NCN)	E	1	U	Y	D	1	2
Diellia unisora (NCN)	E	1	U	Y	D	1	8
Dogweed, ashy	E	2	D	Y	F	1	5
Dropwort, Canby's	E	4	S	Y	F	2	5
Elaphoglossum serpens (NCN)	E	4	D	Y	D	1	5
Erubia	E	4	D	Y	F	1	2C
Eugenia woodburyana (NCN)	E	4	D	N	U	1	5
Evening-primrose, Antioch Dunes	E,CH	1	S	Y	R(1)	2	9
Evening-primrose, Eureka Valley	E	1	I	Y	F	2	9
Evening-primrose, San Benito	T	1	U	Y	D	1	5C
Fern, Alabama streak-sorus	T	4	S	N	U	1	9
Fern, Aleutian shield	E	7	S	Y	F	1	8
Fern, American hart's-tongue	T	4	D	Y	F	1	9
Fern, Elfin tree	E	4	D	Y	F	1	5
Fiddleneck, large-flowered	E,CH	1	D	Y	D	2	5
Fleabane, Zuni (=rhizome)	T	2	S	Y	F	2	8
Four-o'clock, MacFarlane's	E	1	I	Y	F	2	2
Frankenia, Johnston's	E	2	I	Y	F	1	5
Fringe-tree, pygmy	E	4	I	Y	F	2	2
Gahnia lanaiensis (NCN)	E	1	U	Y	D	1	5
Gardenia, Hawaiian (=na'u)	E	1	S	Y	R(1)	1	2
Geocarpon minimum (NCN)	T	4	S	Y	F	1	13
Gerardia, sandplain	E	5	S	Y	RD(1)	1	5C
Gilia, Monterey	E	1	U	N	U	1	3C
Goetzea, beautiful (matabuey)	E	4	D	Y	F	1	5
Goldenrod, Blue Ridge	T	4	U	Y	F	1	8
Goldenrod, Houghton's	T	3	S	Y	D	1	8
Goldenrod, Short's	E	4	S	Y	F	2	8
Goldenrod, white-haired	T	4	S	Y	F	1	8
Goldfields, Burke's	E	1	U	N	U	1	2C
Gooseberry, Miccosukee	T	4	S	NA	Exempt	1	14
Gouania, Hillebrand's	E,CH	1	S	Y	F	1	8

Listed Species	Listed As	Lead Region	Pop. Status	Rec. Plan	Plan Stage	Rec. Ach.	Rec. Prior.
Gouania meyenii (NCN)	E	1	U	Y	D	1	8
Gouania vitifolia	E	1	U	Y	D	1	5
Gourd, Okeechobee	E	4	S	N	U	1	3
Grass, California Orcutt	E	1	U	N	U	1	5C
Grass, Eureka dune	E	1	I	Y	F	3	7
Grass, Solano	E	1	D	Y	F	1	2
Grass, Tennessee yellow-eyed	E	4	I	Y	F	1	8
Ground-plum, Guthrie's	E	4	U	N	U	1	2
Groundsel, San Francisco Peaks	T,CH	2	U	Y	F	2	8
Gumplant, Ash Meadows	T,CH	1	S	Y	F	2	8
Ha'iwale (Cyrtandra crenata)	E	1	U	N	U	1	5
Ha'iwale (Cyrtandra giffardii)	T	1	U	N	U	1	2
Ha'iwale (Cyrtandra limahuliensis)	E	1	U	Y	D	1	14
Ha'iwale (Cyrtandra munroi)	E	1	U	Y	D	1	5
Ha'iwale (Cyrtandra polyantha)	E	1	U	N	U	1	5
Ha'iwale (Cyrtandra tintinnabula)	E	1	U	N	U	1	5
Haha (Cyanea asarifolia)	E	1	U	Y	D	1	5
Haha (Cyanea copelandii ssp. copelandii)	E	1	U	N	U	1	5
Haha (Cyanea grimesiana ssp. obatae)	E	1	D	N	U	1	2
Haha (Cyanea hamatiflora ssp. carlsonii)	E	1	U	N	U	1	5
Haha (Cyanea lobata)	E	1	U	N	U	1	5
Haha (Cyanea macrostegia ssp. gibsonii)	E	1	U	Y	D	1	6
Haha (Cyanea mannii)	E	1	U	N	U	1	2
Haha (Cyanea mceldowneyi)	E	1	U	N	U	1	2
Haha (Cyanea pinnatifida)	E	1	U	Y	D	1	5
Haha (Cyanea procera)	E	1	U	N	U	1	5
Haha (Cyanea shipmanii)	E	1	D	N	U	1	2
Haha (Cyanea stictophylla)	E	1	U	N	U	1	5
Haha (Cyanea superba)	E	1	U	Y	D	1	5
Haha (Cyanea truncata)	E	1	D	N	U	1	5
Haha (Cyanea undulata)	E	1	U	Y	D	1	11
Haplostachys, narrow-leaved	E	1	U	Y	D	1	2
Harebells, Avon Park	E	4	S	N	U	1	2C
Harperella	E	5	S	Y	F	1	8
Hau kuahiwi, Kauai	E	1	D	Y	D	1	2
Heartleaf, dwarf-flowered	T	4	S	N	U	1	14
Heather, mountain golden	T,CH	4	D	Y	F	2	8
Heau	E	1	U	Y	D	1	2
Hedyotis degeneri (NCN)	E	1	U	N	U	1	5
Hedyotis parvula (NCN)	E	1	U	Y	D	1	5
Hedyotis st.-johnii (NCN)	E	1	U	Y	D	1	11
Hesperomannia arborescens (NCN)	E	1	U	N	U	1	5
Hesperomannia arbuscula (NCN)	E	1	U	Y	D	1	5

Listed Species	Listed As	Lead Region	Pop. Status	Rec. Plan	Plan Stage	Rec. Ach.	Rec. Prior.
Hesperomannia lydgatei (NCN)	E	1	U	Y	D	1	11
Hibiscus, Clay's	E	1	U	Y	D	1	2
Higuero de Sierra	E	4	S	Y	F	1	5
Holei	E	1	U	N	U	1	5
Holly, Cook's	E	4	D	Y	F	1	5
Howellia, water	T	6	U	N	U	1	7
Hypericum, highlands scrub	E	4	I	Y	F	3	2
Ihi'ihī (Marsilea villosa)	E	1	I	Y	D	1	8
Ilex sintenisii (NCN)	E	4	D	Y	D	1	11
Iliau, dwarf	E	1	U	Y	D	1	5
Ipomopsis, Holy Ghost	E	2	U	N	U	1	5
Iris, dwarf lake	T	3	S	N	U	1	8
Irisette, white	E	4	D	Y	D	1	8
Ischaemum, hilo	E	1	U	N	U	1	8
Ivesia, Ash Meadows	T,CH	1	S	Y	F	2	8
Jacquemontia, beach	E	4	S	N	U	1	2
Jewelflower, California	E	1	S	N	U	1	2
Joint-vetch, sensitive	T	5	S	N	D	1	2
Kamakahala	E	1	U	Y	D	1	11
Kaula	E	1	D	N	U	1	5
Kaulu	E	1	U	Y	D	1	5
Kio'ele (Hedyotis coriacea)	E	1	U	N	U	1	2
Ko'oko'olau (Bidens micrantha ssp. kalealaha)	E	1	U	N	U	1	9
Ko'oko'olau (Bidens wiebkei)	E	1	U	N	U	1	2
Ko'okoa'ula (=Abutilon, Menzies')	E	1	I	Y	D	1	2C
Koki'o (=hau-hele'ula)	E,CH	1	D	Y	F	1	5
Koki'o ke'oke'o (Hibiscus arnottianus ssp. immaculatus)	E	1	U	N	U	1	3
Kokio, Cooke's	E	1	S	N	NA	1	5
Kulu'i	E	1	U	Y	D	1	8
Ladies'-tresses, Navasota	E	2	D	Y	F	1	2
Ladies'-tresses, Ute	T	6	D	N	U	1	2C
Larkspur, San Clemente Island	E	1	I	Y	F	3	8
Laukahi kuahiwi	E	1	U	N	U	1	5
Layia, beach (=Tidy tips, beach)	E	1	U	N	U	1	2
Lead-plant, crenulate	E	4	S	Y	F	2	5C
Leather-flower, Alabama	E	4	S	Y	F	1	2
Leather-flower, Morefield's	E	4	D	Y	F	1	5
Lepanthes eltoroensis (NCN)	E	4	U	NA	NA	1	5
Leptocereus grantianus (NCN)	E	4	D	Y	D	1	5C
Liliwai	E	1	U	N	U	1	5
Lily, Minnesota dwarf trout	E	3	U	Y	F	2	8C
Lily, western (Lilium occidentale)	E	1	D	N	U	1	2

APPENDIX Species Status Summary

Plants

Listed Species	Listed As	Lead Region	Pop. Status	Rec. Plan	Plan Stage	Rec. Ach.	Rec. Prior.
Live-forever, Santa Barbara Island	E	1	S	Y	F	1	8C
Lobelia niihauensis (NCN)	E	1	U	N	U	1	11
Lobelia oahuensis (NCN)	E	1	U	N	U	1	5
Locoweed, Fassett's	T	3	I	Y	F	1	9
Loosestrife, rough-leaved	E	4	U	Y	D	1	8
Loulu (Pritchardia affinis)	E	1	U	N	U	1	5
Loulu (Pritchardia munroi)	E	1	S	N	U	1	2
Lousewort, Furbish	E	5	S	Y	R(1)	3	14
Lupine, clover (=Lupine, Point Reyes)	E	1	U	N	U	1	8
Lupine, scrub	E	4	D	Y	F	2	2C
Lyonia truncata var. proctorii (NCN)	E	4	D	Y	D	1	6C
Lysimachia filifolia (NCN)	E	1	U	Y	D	1	5
Lysimachia lydgatei (NCN)	E	1	U	N	U	1	2
Mahoe (Alectryon macrococcus)	E	1	D	N	U	1	5
Makou	T	1	U	Y	D	1	8
Mallow, Kern	E	1	S	N	U	1	2
Mallow, Peters Mountain	E	5	I	Y	F	3	5
Manioc, Walker's	E	2	U	Y	F	1	5
Manzanita, Presidio (=Raven's)	E	1	S	Y	F	2	12
Mariscus fauriei (NCN)	E	1	U	N	U	1	14
Maua (Xylosma crenatum)	E	1	U	Y	D	1	5
Meadowfoam, Butte County	E	1	D	N	U	1	2C
Meadowfoam, Sebastopol	E	1	D	N	U	1	2C
Meadowrue, Cooley's	E	4	S	Y	F	2	2
Milk-vetch, Applegate's	E	1	D	N	U	1	5
Milk-vetch, Ash Meadows	T,CH	1	S	Y	F	2	8
Milk-vetch, Cushenbury	E	1	D	N	U	1	8
Milk-vetch, Heliotrope	T,CH	6	U	N	U	1	17
Milk-vetch, Jesup's	E	5	S	Y	F	1	7C
Milk-vetch, Mancos	E	2	D	Y	F	1	5C
Milk-vetch, Osterhout	E	6	D	Y	F	2	2
Milk-vetch, sentry	E	2	D	Y	D	1	3
Milkpea, Small's	E	4	D	Y	F	1	5C
Milkweed, Mead's	T	3	D	N	U	1	8
Milkweed, Welsh's	T,CH	6	D	Y	F	1	5C
Mint, Garrett's (=scrub)	E	4	D	Y	F	1	2C
Mint, Lakela's	E	4	S	Y	F	2	2C
Mint, longspurred	E	4	D	Y	F	1	2C
Mint, San Diego mesa	E	1	D	N	U	1	5
Mint, Otay Mesa	E	1	U	N	U	1	2C
Mint, scrub	E	4	D	Y	F	1	2
Mitracarpus maxwellidae (NCN)	E	4	D	N	U	1	5
Mitracarpus polycladus (NCN)	E	4	D	N	U	1	5

Listed Species	Listed As	Lead Region	Pop. Status	Rec. Plan	Plan Stage	Rec. Ach.	Rec. Prior.
Monkey-flower, Michigan	E	3	S	Y	D	1	9C
Monkshood, northern wild	T	3	U	Y	RD(1)	2	8
Munroidendron racemosum (NCN)	E	1	U	Y	D	1	2
Mustard, Carter's	E	4	D	Y	F	1	2
Mustard, Penland alpine fen	T	6	U	N	U	1	11C
Mustard, slender-petaled	E	1	D	N	U	1	5C
Myrcia paganii (NCN)	E	4	U	N	U	1	8
Naupaka, dwarf	E	1	S	N	U	1	2
Na'ena'e (Dubautia herbstobatae)	E	1	U	Y	D	1	2
Na'ena'e (Dubautia latifolia)	E	1	U	Y	D	1	5
Na'ena'e (Dubautia pauciflora)	E	1	U	Y	D	1	8
Nehe (Lipochaeta fauriei)	E	1	U	Y	D	1	2
Nehe (Lipochaeta kamolensis)	E	1	U	N	U	1	2
Nehe (Lipochaeta lobata var. leptophylla)	E	1	U	Y	D	1	6
Nehe (Lipochaeta micrantha)	E	1	U	Y	D	1	2
Nehe (Lipochaeta tenuifolia)	E	1	U	Y	D	1	8
Nehe (Lipochaeta venosa)	E	1	U	Y	D	1	5
Nehe (Lipochaeta waimeaensis)	E	1	U	Y	D	1	2
Neraudia angulata (NCN)	E	1	U	Y	D	1	5
Nioi	E	1	U	N	U	1	5
Niterwort, Amargosa	E,CH	1	S	Y	F	2	8
Nohoanu (Geranium arboreum)	E	1	U	N	U	1	2
Nohoanu (Geranium multiflorum)	E	1	U	N	U	1	8
Oak, Hinckley's	T	2	D	Y	F	1	8
Oha wai (Clermontia lindseyana)	E	1	U	N	U	1	2
Oha wai (Clermontia oblongifolia ssp. brevipes)	E	1	U	N	U	1	6
Oha wai (Clermontia oblongifolia ssp. mauiensis)	E	1	U	N	U	1	6
Oha wai (Clermontia peleana)	E	1	U	N	U	1	5
Oha wai (Clermontia pyrularia)	E	1	U	N	U	1	2
Ohe'ohe	E	1	U	N	U	1	5
Olulu	E	1	D	Y	D	1	2
Opuhe	E	1	U	Y	D	1	5
Orchid, eastern prairie fringed	T	3	U	Y	D	1	8
Orchid, western prairie fringed	T	3	S	Y	D	1	8
Oxytheca, Cushenbury	E	1	S	N	U	1	9
Paintbrush, San Clemente Island Indian	E	1	I	Y	F	1	8
Palma de, Manaca (=manac palm)	T	4	D	Y	F	2	8
Palo colorado	E	4	S	Y	D	1	11
Palo de jazmin	E	4	U	Y	D	1	5
Palo de nigua	E	4	D	Y	F	1	5
Palo de Ramon	E	4	D	Y	F	1	5
Palo de Rosa	E	4	S	Y	F	1	8
Pamakani	E	1	U	Y	D	1	3

Listed Species	Listed As	Lead Region	Pop. Status	Rec. Plan	Plan Stage	Rec. Ach.	Rec. Prior.
Panicgrass, Carter's	E,CH	1	S	Y	D	1	9
Pawpaw, beautiful	E	4	D	Y	F	1	2
Pawpaw, four-petal	E	4	S	Y	F	2	11
Pawpaw, Rugel's	E	4	D	Y	F	1	2
Pennyroyal, Todsen's	E,CH	2	I	Y	F	1	8
Penstemon, blowout	E	6	S	Y	F	2	11C
Peperomia, Wheeler's	E	4	S	Y	F	1	5
Phacelia, clay	E	6	D	Y	F	1	5
Phacelia, North Park	E	6	U	Y	F	2	5
Phlox, Texas trailing	E	2	U	Y	D	1	3
Phyllostegia glabra var. lanaiensis (NCN)	E	1	U	Y	D	1	3
Phyllostegia mannii (NCN)	E	1	U	N	U	1	2
Phyllostegia mollis (NCN)	E	1	U	Y	D	1	8
Phyllostegia waimeae (NCN)	E	1	U	Y	D	1	5
Pilo (Hedyotis mannii)	E	1	U	U	U	1	5
Pink, swamp	T	5	S	Y	F	1	7C
Pinkroot, gentian	E	4	D	N	U	1	2
Pitaya, Davis' green	E	2	D	Y	F	1	3
Pitcher-plant, Alabama canebrake	E	4	D	Y	F	1	6
Pitcher-plant, green	E	4	I	Y	RD(2)	2	8
Pitcher-plant, mountain sweet	E	4	S	Y	F	2	3
Plum, scrub	E	4	D	Y	F	2	2
Poa siphonoglossa (NCN)	E	1	D	Y	D	1	2
Po'e (Portulaca sclerocarpa)	E	1	U	N	U	1	2
Pogonia, small-whorled	E	5	I	Y	R(1)	3	14
Polygala, Lewton's	E	4	D	N	U	1	8
Polygala, tiny	E	4	S	Y	F	2	5C
Polystichum calderonense (NCN)	E	4	D	Y	D	1	5
Pondberry	E	4	S	Y	F	1	8
Pondweed, Little Aguja Creek	E	2	D	Y	F	1	5
Poppy-mallow, Texas	E	2	D	Y	F	1	2
Poppy, Sacramento prickly	E	2	U	Y	F	1	3
Potato-bean, Price's	T	4	S	Y	F	1	8
Prairie-clover, leafy	E	4	D	Y	F	1	5
Prickly-apple, fragrant	E	4	D	Y	F	1	3
Prickly-ash, St. Thomas	E	4	D	Y	F	1	2C
Primrose, Maguire	T	6	D	Y	F	2	5C
Quillwort, black-spored	E	4	S	Y	F	1	5
Quillwort, Louisiana	E	4	S	N	U	1	8
Quillwort, mat-forming	E	4	S	Y	F	1	8
Rattleweed, hairy (=wild indigo)	E	4	D	Y	F	1	8
Reed-mustard, Barneby	E	6	U	Y	F	1	5
Reed-mustard, clay	T	6	U	Y	F	1	14

Listed Species	Listed As	Lead Region	Pop. Status	Rec. Plan	Plan Stage	Rec. Ach.	Rec. Prior.
<i>Remya kauaiensis</i> (NCN)	E	1	U	Y	D	1	11
<i>Remya mauiensis</i> (NCN)	E	1	U	N	U	1	5
<i>Remya montgomeryi</i> (NCN)	E	1	U	Y	D	1	5
Rhododendron, Chapman's	E	4	D	Y	F	1	8C
Ridge-cress (=pepper-cress), Barneby	E	6	D	Y	F	1	5C
Rock-cress, McDonald's	E	1	S	Y	F	3	2
Rock-cress, shale barren	E	5	S	Y	F	2	11
<i>Rollandia crispa</i> (NCN)	E	1	U	N	U	1	5
Rosemary, Apalachicola	E	4	I	Y	F	1	8
Rosemary, Cumberland	T	4	U	N	U	1	8
Rosemary, Etonia	E	4	S	Y	F	1	2C
Rosemary, short-leaved	E	4	S	N	U	1	8C
Roseroot, Leedy's	T	3	S	Y	D	1	9
Rush-pea, slender	E	2	D	Y	F	1	2
Sand-verbena, large-fruited	E	2	D	Y	F	1	2
Sandalwood, Lanai (=‘iliahi)	E	1	S	Y	D	1	3
Sandlace	E	4	D	N	U	2	8
Sandwort, Cumberland	E	4	U	Y	D	1	8
Sandwort, marsh	E	1	D	N	U	1	5C
<i>Sanicula mariversa</i> (NCN)	E	1	U	Y	D	1	5
<i>Schiedea apokremnos</i> (NCN)	E	1	U	Y	D	1	8
<i>Schiedea</i> , Diamond Head	E	1	S	Y	F	1	2
<i>Schiedea haleakalensis</i> (NCN)	E	1	U	N	U	1	2
<i>Schiedea kaalae</i> (NCN)	E	1	U	Y	D	1	2
<i>Schiedea lydgatei</i> (NCN)	E	1	U	N	U	1	8
<i>Schiedea spergulina</i> var. <i>leiopoda</i> (NCN)	E	1	U	Y	D	1	5
<i>Schiedea spergulina</i> var. <i>spergulina</i> (NCN)	T	1	U	Y	D	1	8
<i>Schoepfia arenaria</i> (NCN)	T	4	D	Y	F	1	5C
Sedge, Navajo	T,CH	2	U	Y	F	1	8
<i>Serianthus nelsonii</i> [Hyun lagu (Guam), Trokon guafi (Rota)]	E	1	D	Y	F	1	5
<i>Silene alexandri</i> (NCN)	E	1	U	N	U	1	2
<i>Silene hawaiiensis</i> (NCN)	T	1	U	N	U	1	8
<i>Silene lanceolata</i> (NCN)	E	1	U	N	U	1	2
Silversword, Haleakala (=‘ahinahina)	T	1	S	Y	D	1	9
Silversword, Ka‘u	E	1	U	Y	D	1	5
Silversword, Mauna Kea (=‘ahinahina)	E	1	D	Y	F	1	6
Skullcap, Florida	T	4	S	Y	F	1	2
Skullcap, large-flowered	E	4	S	Y	D	1	8
Snakeroot, scrub-celery	E	4	D	Y	F	2	2
Snowbells, Texas	E	2	I	Y	F	1	2
Spineflower, Ben Lomond	E	1	U	N	U	1	2C
Spineflower, Howell's	E	1	D	N	U	1	2

Listed Species	Listed	Lead	Pop.	Rec.	Plan	Rec.	Rec.
	As	Region	Status	Plan	Stage	Ach.	Prior.
Spineflower, Monterey	T	1	S	N	U	1	9C
Spineflower, robust	E	1	D	N	U	1	9C
Spineflower, slender-horned	E	1	U	N	U	1	1C
Spineflower, Sonoma	E	1	D	N	U	1	2
Spiraea, Virginia	T	5	S	Y	F	1	8
Spurge, deltoid	E	4	D	Y	F	2	6C
Spurge, Garber's	T	4	S	Y	F	2	8
Spurge, telephus	T	4	S	Y	F	1	2
Stenogyne bifida (NCN)	E	1	U	N	U	1	2
Stenogyne campanulata (NCN)	E	1	U	Y	D	1	2
Stenogyne, kanehoana	E	1	U	Y	D	1	2
Stenogyne, narrow-leaved	E	1	S	Y	D	1	2
Sumac, Michaux's	E	4	D	Y	F	1	2
Sunflower, Schweinitz's	E	4	D	Y	F	1	5
Sunray, Ash Meadows	T,CH	1	S	Y	F	2	9
Sunshine, Sonoma (=Stickyseed, Baker's)	E	1	D	N	U	1	5C
Tectaria estremezana (NCN)	E	4	U	Y	D	1	8
Ternstroemia subsessilis	E	4	S	Y	D	1	11
Tetramolopium arenarium (NCN)	E	1	D	N	U	1	5
Tetramolopium filiforme (NCN)	E	1	U	N	U	1	2
Tetramolopium lepidotum ssp. lepidotum (NCN)	E	1	U	Y	D	1	2
Tetramolopium remyi (NCN)	E	1	U	Y	D	1	5
Tetramolopium rockii (NCN)	T	1	U	N	U	1	14
Thelypteris inabonensis (NCN)	E	4	U	Y	D	1	5
Thelypteris verecunda (NCN)	E	4	U	Y	D	1	5
Thelypteris yaucoensis (NCN)	E	4	D	Y	D	1	5
Thistle, Pitcher's	T	3	D	Y	D	1	8C
Thistle, Sacramento Mountains	T	2	S	Y	F	1	2
Thormint, San Mateo	E	1	D	N	U	1	6C
Torreya, Florida	E	4	D	Y	F	1	5
Townsendia, Last Chance	T	6	U	Y	F	1	5C
Trillium, persistent	E	4	S	Y	F	2	8
Trillium, relict	E	4	D	Y	F	1	8
Twinpod, Dudley Bluffs	T	6	S	Y	F	2	14
Uhiuhi	E	1	D	Y	D	1	5
Vernonia proctorii (NCN)	E	4	D	Y	D	1	5C
Vetch, Hawaiian	E	1	S	Y	F	1	2C
Viola helenae (NCN)	E	1	U	Y	D	1	8
Viola lanaiensis (NCN)	E	1	U	Y	D	1	2
Wahine noho kula (Isodendron pyrifolium)	E	1	U	N	U	1	2
Wallflower, Ben Lomond	E	1	U	N	U	1	2C
Wallflower, Contra Costa	E,CH	1	S	Y	R(1)	2	6
Wallflower, Menzies'	E	1	D	N	U	1	2C

Listed Species	Listed As	Lead Region	Pop. Status	Rec. Plan	Plan Stage	Rec. Ach.	Rec. Prior.
Warea, clasping (=wide-leaf)	E	4	D	Y	F	1	2C
Water-plantain, Kral's	T	4	S	Y	F	1	5C
Water-willow, Cooley's	E	4	U	Y	F	1	8
Watercress, Gambel's	E	1	D	N	U	1	2C
Wawae'iole (Huperzia (=Lycopodium) nutans)	E	1	U	N	U	1	5
Wawae'iole (Huperzia (=Lycopodium) mannii)	E	1	U	N	U	1	5
Whitlow-wort, papery	T	4	D	Y	F	3	8
Wild-rice, Texas	E,CH	2	D	Y	F	1	2C
Wings, pigeon	T	4	U	N	U	1	14
Wire-lettuce, Malheur	E,CH	1	U	Y	F	2	2
Wireweed (=Polygonella basiramia)	E	4	D	Y	F	3	2
Woolly-star, Hoover's	T	1	I	N	U	1	2
Woolly-star, Santa Ana River	E	1	D	N	U	1	3C
Wooly-threads, San Joaquin	E	1	D	N	U	1	2
Ziziphus, Florida	E	4	S	Y	F	2	5



Species: *Chisos Mountain hedgehog cactus*

Listed As: *Threatened*

Population Status: *Declining*

NPS PHOTO



Species: *MacFarlane's four-o'clock*

Listed As: *Endangered*

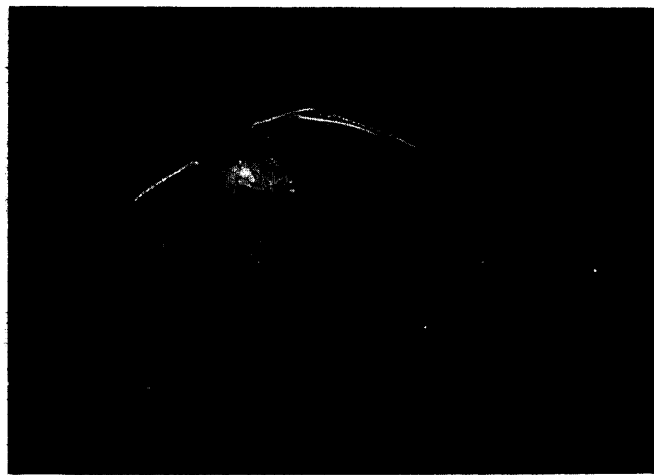
Population Status: *Improving*

PAULA BROOKS



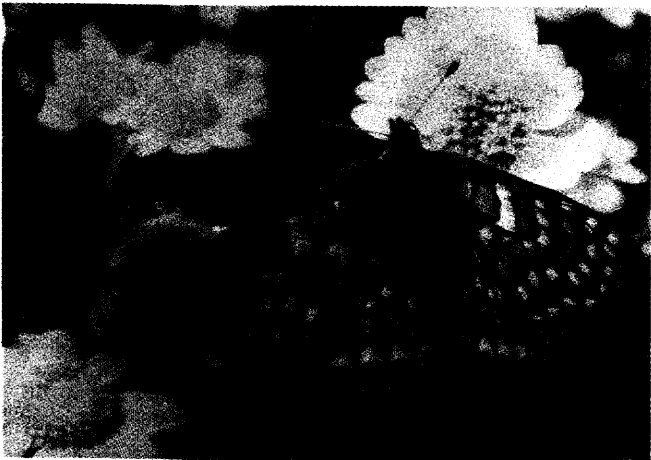
Species: Oha wai
Listed As: Endangered
Population Status: Uncertain

OBY ROHRER



Species: Tooth Cave spider
Listed As: Endangered
Population Status: Uncertain

WYMAN MEINZER



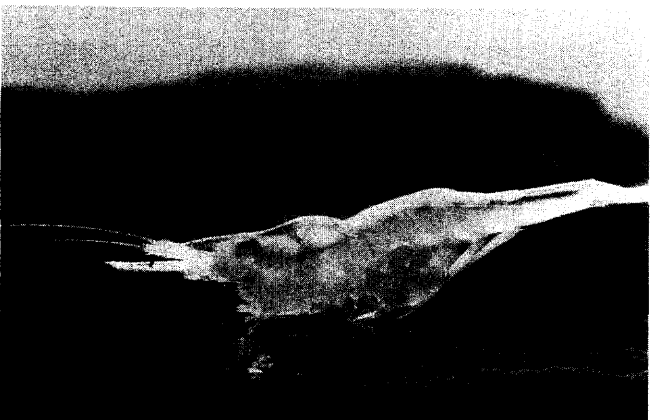
Species: Bay checkerspot butterfly
Listed As: Threatened
Population Status: Declining

AUL OPLER



Species: Ouachita rock-pocketbook
Listed As: Endangered
Population Status: Declining

PAT MEHLHOP



Species: Kentucky Cave shrimp
Listed As: Endangered
Population Status: Uncertain

HIP CLARK



Species: Gray wolf
Listed As: Endangered
Population Status: Improving

DAVE MECH



Report to Congress

Recovery Program

Endangered and Threatened Species ♦ 1994

