Implementation of the Endangered Species Act of 1973

Report to the House Committee on Resources
Richard W. Pombo, Chairman
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Contents

I.	**Executive Summary**	**1**
II.	**Overview**	**2**
III.	**Introduction**	**7**
IV.	**Delisted Species**	**7**
V.	**Reclassified Species**	**12**
VI.	**Report to Congress**	**17**
VII.	**Species Expenditures**	**34**
VIII.	**Critical Habitat**	**53**
IX.	**Findings**	**61**
X.	**Recommendations**	**62**
XI.	**Appendices**	**64**

1. **Delisted Species Report as of 5/4/05**
2. **Active Lawsuits: 2/16/05**
3. **The current FWS listing process – Approximate range of average costs of rulemaking**
4. **Cooperative Endangered Species Conservation**
5. **Table of FWS ESA Actions**
6. **Maps of California Critical Habitat**

List of Figures and Tables

Figure 1	**Recoverability Prospects (FWS 2002)**	**18**
Figure 2	**Threat Level (FWS 2002)**	**18**
Table 1	**FWS Listings by Priority (2002)**	**19**
Figure 3	**Recovery Achieved (FWS 2002)**	**21**
Figure 4	**Recovery Status (FWS 2002)**	**22**
Figure 5	**Recovery Status (Narrative NMFS 2002)**	**28**
Figure 6	**Recovery Status (Table NMFS 2002)**	**28**
Table 2	**"Entities" with largest reported expenditures in FY 2003**	**36**
Table 3	**"Species" with largest reported expenditures in FY 2003**	**36**
Table 4	**FWS Priority "1C" species expenditure and ranking FY 2003**	**37**
Figure 7	**Total Federal and State ESA Expenditures**	**38**
Table 5	**ESA Expenditures by Agency**	**38**
Figure 8	**ESA Expenditures by Agency FY 2003**	**39**
Figure 9	**US FWS ESA Expenditures by FY**	**40**
Figure 10	**NMFS ESA Expenditures by FY**	**40**
Figure 11	**Section 6 Funding**	**41**
Figure 12	**BPA 'Other' Expenditures by Fiscal Year**	**42**
Figure 13	**Bureau of Reclamation ESA Expenditures by FY**	**42**
Figure 14	**Army Corps of Engineers ESA Expenditures by FY**	**43**
Figure 15	**USDA Forest Service ESA Expenditures by FY**	**43**
Table 6	**Expenditures by Taxon FY 2003**	**44**
Figure 16	**Expenditures by Taxon FY 2003**	**44**
Table 7	**Expenditures on 'Non-Charismatic' Species**	**45**
Table 8	**Expenditures on Species Listed with Erroneous Data**	**48**
Figure 17	**Informal Consultations Completed**	**49**
Figure 18	**Formal Consultations Completed**	**50**
Figure 19	**Habitat Conservation Plans Completed**	**53**
Table 9	**California FWS Species with Critical Habitat**	**58-59**
Table 10	**Florida FWS Species with Critical Habitat**	**60**
Table 11	**Texas FWS Species with Critical Habitat**	**60**

I. Executive Summary

There is increasing recognition from most quarters that the Endangered Species Act (ESA) needs to be improved. Exactly what those improvements should be is less uniform. This report examines the implementation of selected aspects of the endangered species program relying predominately on information provided by the primary implementing agencies, the United States Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) and offers some recommendations for possible improvements to the program.

Debate over the ESA has traditionally been highly polarized. For example, compensating landowners for takings or reductions in property value has been opposed by some who argue updating the law to address this is not necessary. While consensus on other issues such as the need for increasing conservation incentives and the role states play in endangered species conservation has begun to emerge, one of the most debated aspects of ESA implementation continues to be whether the ESA is effectively conserving endangered and threatened species.

While there have been significant strides in conserving individual species such as the whooping crane, red-cockaded woodpecker and gray wolf, few species have been delisted (removed from the endangered list) or downlisted (changed in status from endangered to threatened) because of successful ESA conservation efforts. Some argue that the number of recovered species is an unfair measure, asserting that the three decades the ESA has been in existence is an insufficient amount of time for the lengthy process of species recovery and point to listed species that have not gone extinct as evidence the ESA 'saves' species. From the opposing perspective, while recovery to the point of delisting may require a substantial amount of time for many species, after three decades more progress should be demonstrable through species that have recovered and been delisted. Even if a species has increased in numbers or distribution or the threats facing the species have been reduced, if it has not been delisted on the basis of recovery, the ESA's prohibitions and regulations remain applicable and the ESA should not be a 'one way street.'

Of 40 total species removed from the list, 10 domestic species were delisted because of "recovery". Of 33 reclassified species, 10 domestic downlistings (a change from endangered to threatened status) reflected a reduced threat assessment which also allowed more flexibility in management. The FWS's most recent report to Congress (Fiscal years 2001-2002) shows that 77 percent of listed species fall in the 0 to 25 percent recovery achieved bracket and 2 percent fall in the 76 to 100 percent recovery achieved bracket. 39 percent of the FWS managed species are of uncertain status. Of those with an assessed trend, at one end of the spectrum are 3 percent possibly extinct, 1 percent occurring only in captivity and 21 percent declining and at the other end are 30 percent stable and 6 percent improving. These assessments however are subjective. Additionally, the assessment that a species is improving or stable may reflect, for example, a reduction in perceived threats or corrections to inaccurate threat assessments that stemmed from erroneous data rather than actual changes in species' trends that are demonstrated by

improved numbers, distribution or other such measurements. Consequently, a meaningful assessment of conservation trends under the ESA using these data is not possible.

The data used to list a number of species has been subsequently determined to be erroneous and species that likely do not merit classification as endangered or threatened remain listed. This can consume resources that could be directed to species that do merit listing. The assignment of recovery priorities appears highly skewed and the recovery priority for some species seems questionable. A meaningful distinction between endangered status and threatened status has been blurred as has been the framework for the mechanism of critical habitat. Expenditure reporting has improved but presents an incomplete picture of financial resources dedicated to endangered species. Workloads for litigation regarding activities such as consultation and listing under the ESA's complex structure compete for resources that could otherwise be directed at recovery efforts. The demands associated with ESA Section 4 determinations in combination with the pace of species listings and delistings, the number of possible future additions to the list and the economic impact of listings likely indicate that the current program is not sustainable.

II. Overview

Currently there are some 1,264 domestic endangered and threatened species listed under the ESA. Additionally, there are 562 foreign ESA listed species. The vast majority of these species fall under the jurisdiction of the FWS. The remaining are under the jurisdiction of NMFS or are managed jointly by the two agencies.

Since the ESA was enacted, there have been ten domestic species delisted as recovered. For three of the 10 recovered species (American peregrine falcon, arctic peregrine falcon and brown pelican) the banning of DDT was a cause, if not the primary cause in recovery according to the FWS. Erroneous data regarding population numbers, population trend, distribution or reproductive potential led to an initially overestimated threat for six of ten recovered species including the alligator, brown pelican, gray whale, Hoover's woolly star, Tinian monarch and, to a lesser extent, the Aleutian Canada goose. One recovered species, the Columbian white-tailed deer, was delisted over a part of its range and remains endangered in the remainder of its range. Several recovered species including the Columbian white-tailed deer, Aleutian Canada goose and alligator benefited from limitations placed on harvesting. Several species (Aleutian Canada goose, American peregrine falcon and the plant Robbins' cinquefoil) benefited from conservation activities that included eradication of predators, introductions, cultivation, transplanting and habitat management. Similarly, ten domestic species were reclassified as threatened based upon a reduced threat assessment.

Pursuant to the ESA, the FWS and NMFS are to produce a Report to Congress every two years that provides information about recovery efforts directed at listed species. The FWS report includes data on the "status" and "recovery achieved" of listed species as well as other information. As of the FWS's most recent report, a majority of listed species (63 percent) are considered to be of uncertain or declining status or are possibly extinct. While some 36 percent are considered stable or improving, these

assessments (like that of declining) are in large part 'guesstimates'. Further, assessments of stable or improving do not necessarily indicate what they would seem to indicate. The values stable or improving can indicate that a negative population trend has been halted or that there been a measurable increase in the numbers or distribution of a species. However, these values can also indicate that earlier data regarding the species has been subsequently determined to be erroneous.

For example, data gathered after listing showed that there were not some 1,500 individual specimens of Johnston's frankenia, a plant, as was believed at the time of listing but more than 9,000,000. This species was assessed as improving in the most recent FWS report and has been proposed for delisting.

Such improving or stable assessments may also indicate that what biologists perceived as a threat, such as the 'inadequacy of existing regulatory mechanisms' has been reduced because property ownership changed, management contracts were negotiated, or other laws or regulations affecting the species were enacted. For example, Hoover's woolly star, another plant that was significantly undercounted at the time of listing and eventually delisted, was assessed as stable in the FWS's most recent Report to Congress. The species was considered to be stable in part because of the newly discovered specimens and in part because of conservation agreements with landowners.

By another FWS measurement, "recovery achieved", 93percent of species fall in the 0-50percent range and 77percent fall in the 0-25percent range. On the other end of the scale, the FWS reports that only 2percent of listed species (25) fall in the 76percent or more recovery achieved range. In fact, as of the most recent report, there were more listed species that were possibly extinct (35) than there were species in the 76percent or more recovery achieved range (25).

As with the status measurement, the recovery achieved measurement may also reflect factors such as new information that reveals original listing data was in error. It is important to recognize that an assessment that, for example, a listed species is improving following the discovery that the species is more abundant is not just misleading 'spin'. The assessment of a species' status and the actions remaining to achieve recovery are tied to threat based assessments. If, for example, a species' known numbers increase due to new surveys, then the threat may be reassessed. An increase in known numbers or distribution may show the species to be closer to recovery criteria than previously believed. Populations discovered on public property may be believed by biologists to be more secure than those previously known only from private property. Consequently, the threat may be considered reduced and goals of establishing secure populations are less difficult to meet. In such cases the species may be assessed as improving or be moved to a higher recovery achieved bracket.

At the same time, it is important to remember that such changes in information about the species, while valuable in management decisions, do not reflect actual improvement of the species' condition but a correction to earlier erroneous data. Existing law requires listing determinations to be made based on the "best scientific and commercial data available." 'Best' is a qualitative and comparative term and currently

presents a low threshold. This standard can and does lead to listing of species based on incorrect assessments of the threats species face.

As of the FWS's most recent Report to Congress, some 3 percent of listed species are assessed as 'possibly extinct' and only two of these have been subsequently delisted. (It should be noted that the vast majority of these possible extinctions likely occurred prior to listing and in cases prior to the enactment of the ESA). One of these, the ivory-billed woodpecker has been recently 'rediscovered.'

Historically, more species have been delisted and downlisted following the determination that original data was erroneous than have been delisted and downlisted on the basis of a reduced threat or recovery. There are likely a number of other currently listed species that should also be delisted or downlisted on the basis of erroneous data. The listing of species that do not merit endangered or threatened status can consume conservation resources from species that are actually endangered or threatened.

For example, the process for removing species that were added to the list on the basis of erroneous data, or that are believed to be extinct, is essentially the same as it would be for any other species requiring proposed and final rules. The FWS estimates the approximate average cost range to publish proposed and final rules to implement any such determination to be $75,000 - $125,000 and $50,000 - $140,000 respectively.

Listed species that do not merit continued endangered or threatened classification may trigger other costs as well, as was the case with the Preble's meadow jumping mouse, a species the FWS recently proposed for delisting. An economic impact assessment accompanying the critical habitat designation for this species estimated costs to be $79 – $183 million over ten years. These costs fall upon other governmental agencies and private parties.

Another example of costs resulting from species listed with erroneous data is some 248 federal actions that were reviewed for their effects upon Eggert's sunflower. This species is now proposed for delisting because the numbers and distribution of the species were underestimated (increasing from 34 known sites at the time of listing to 279 known sites) and the threats to the species were overestimated (the species may actually benefit from human activities such as forest thinning and brush clearing as it occurs in disturbed areas). The FWS was also compelled to reconsider its determination not to designate critical habitat for this species after being sued by the Southern Appalachian Biodiversity Project. The FWS again determined it would not be prudent to designate critical habitat when it proposed delisting the species on the basis of erroneous data.

Expenditures of resources on species which do not merit listing also increases the burdens on agencies that already carry large workloads in terms of listing, a process driven in large part by litigation, consultation, permitting and other ESA activities. As regards the litigation workload, the FWS reports in its most recent budget justifications that the agency faces 34 active lawsuits with respect to 48 species, 40 court orders involving 88 species, and 36 notices of intent to sue involving 104 species. This litigation workload was reported only with respect to the program's listing activities.

The FWS reports that the consultation workload for Fiscal Year 2004 included over 71,000 informal consultations and over 4,000 formal consultations. The consultation requirements of the ESA also significantly affect other agencies, and in cases, appear unduly burdensome. For example, among incidents reported by US Forest Service and Bureau of Land Management officials was a consultation that regarded allowing a Native American tribe to harvest a single cedar tree for use as a ceremonial canoe. It required about two years.

Even without the volume of litigation affecting the listing program, the potential resources demanded by the listing process are huge. Using *the low end* of the FWS's average cost ranges for proposed and final listing regulations, designation of critical habitat and performing accompanying economic and NEPA assessments, a simplistic cost projection for the 283 current candidate species exceeds $150 million. These activities occur at the front end of the program and are followed by other program actions like recovery, consultation and law enforcement that consume a much larger share of the implementing agencies' budgets. To put this cost in perspective, the FWS's Fiscal Year 2004 budget for listing (which includes critical habitat designation) was $12.1 million, providing a strong indication that the current process is not sustainable, especially in the current budget atmosphere.

The FWS also produces annual reports detailing expenditures on listed species. The reports have improved significantly in recent years but clearly still fail to include many ESA costs born by federal and state agencies that are within the scope of the reports. Additionally, the report's scope as provided by law, fails to capture large expenditures on endangered and threatened species, including those born by counties, cities, businesses and private persons.

In the most recent reports, FWS and NMFS ESA expenditures are well under half of all Federal expenditures. The FWS and the NMFS expenditures are substantially exceeded by those reported by other Federal agencies even though these other agencies' expenditures are likely underreported. Particularly noteworthy among recently reported Federal expenditures are the Bonneville Power Administration's reported Fiscal Year 2001 expenditures approaching $1.7 billion during the West Coast energy crisis. Most of these costs are passed on through increases in power rates.

Economic analyses conducted in association with critical habitat designations have indicated similarly large potential costs. For example, economic analyses conducted for the California tiger salamander, California gnatcatcher, and a group of West Coast species fell in a range of about $100 million to $1.3 billion.

The cost of the ESA is clearly measured in billions but an accurate accounting of Federal, state and private expenditures is not determinable with currently available data. Critical habitat may have its most significant impact in California where more than 10 percent of the state has been included in just the FWS's critical habitat designations even though the FWS questions the conservation value of these designations. Agency regulations inconsistent with statute and conflicting court rulings have muddled the application of critical habitat designation to conservation.

Other available data reveal that species ranked as being at the very highest priority level are not generally among those receiving the largest expenditures. The assessments of priorities for individual species, however, is in question given a highly lopsided distribution toward higher priority rankings (over 92 percent of species have been accorded priorities putting them in the upper half of the FWS's ranking system). Many species that have recovery plans that appear to indicate poor recovery prospects have recovery priorities that indicate a high recovery potential. Similarly, 38 percent of the species that have a recovery potential indicating a "low" degree of threat are classified as endangered rather than threatened.

While some species have clearly benefited from the ESA, three decades after the Act's passage few species have been delisted or downlisted because of effective ESA conservation efforts. With well under half of 1,264 listed species considered stable or improving and the vast majority of listed species falling in the 0 to 25 percent recovery achieved bracket, it seems unlikely that the slow pace of delisting and downlisting will change substantially in the near future.

The data that are now available in the Report to Congress are essentially qualitative and are subjective to the degree that in cases they constitute 'guesstimates.' Additionally, what may appear to be improvements are, in many instances, actually corrections of erroneous data. Consequently, although the ESA has been in effect for more than three decades, the available data cannot be used to meaningfully assess any overall conservation effects of the endangered species program. The reports produced by the FWS and the NMFS could be substantially improved to facilitate better assessment of the effects of and better management of the endangered species program.

Current expenditure reporting has improved but could be further improved. Expenditures under the ESA are much larger than as is revealed by the endangered species budgets of the primary implementing agencies and the greatest share of federal expenditures comes from other than the primary implementing agencies. Although these reports document substantial expenditures, current reporting provides an incomplete picture. Some of the largest identifiable costs of the endangered species program are those reported in critical habitat economic impact assessments that fall upon other governmental agencies and private parties.

Review of the program indicates that stronger scientific standards deigned to reduce the number of species listed on the basis of erroneous data are needed to prevent waste of conservation funds and unnecessary economic impacts. Means of reducing the regulatory burden of the current delisting/downlisting process with regard to species listed on erroneous data, or that are believed extinct, could increase the funds available for other program activities such as recovery as could provisions that reduce the litigation workload imposed on the implementing agencies. This could also improve the program's credibility. Addressing these issues might allow many talented endangered species biologists to dedicate more time to recovery work in the field and to improving the ESA's recovery record.

III. Introduction

The Endangered Species Act (ESA) was enacted in 1973.[1] While authorization of appropriations for the Act expired in 1993, the ESA has continued to have the force of law through annual appropriations. The endangered species program administered by the FWS and the NMFS has been in effect for more than three decades.[2] The term "species" under the ESA is a legal term that also includes in its definition subspecies and distinct vertebrate population segments. Biologists do not see these three terms as equivalent. Full species can be identified by a Latin binomial (two-part name) such as with the bald eagle (*Haliaeetus leucocephalus*), and subspecies can be identified by their Latin trinomial (three-part name) such as with the Preble's meadow jumping mouse (*Zapus hudsonius preblei*). A distinct population segment may often be identified by references to a "population of" or "DPS" such as with the gray wolf.[3]

As of February 14, 2005, the FWS reported that some 1,264 domestic species were on the endangered list.[4] Of the FWS's 9,500 authorized full time employees for Fiscal Year 2004, an estimated 533 positions were attributed to the endangered species account, with estimated expenses at 136.9 million.[5] The NMFS reports 2,648 full time employees operating under a FY04 budget of $785 million, with 523 working under the ESA account and a FY04 budget of about $101 million.[6]

The FWS and the NMFS budgets for ESA work are often cited as evidence of a small investment being made in an endangered species program by those who hold that the law is generally sound but has been underfunded. While not many species have been removed from the endangered species list, some assert that it has been effective in saving species from extinction. There are deficiencies in the available data that inhibit some assessments of the endangered species program, but there is enough data to review aspects of ESA implementation.

Oversight and investigations staff reviewed FWS and NMFS information including the biannual Report to Congress on the Recovery of Threatened and Endangered Species and annual Species by Species Expenditures Reports,[7] information regarding endangered species that have been delisted (removed from a list of endangered and threatened species[8]) and reclassified (changed in status from endangered to threatened or vise versa), information regarding critical habitat and from endangered species recovery plans and other endangered species program data provided by the FWS and the NMFS.

IV. Delisted Species

The FWS's most recent Report to Congress on the recovery program recognizes that "[t]he primary purpose of the Endangered Species Act of 1973 … is the conservation of endangered and threatened species and the ecosystems upon which they depend. *The ultimate goal of such conservation efforts is the recovery of endangered and threatened species, so that they no longer need the protective measures afforded by the Act*."[9] (emphasis added)

Under ESA regulations the Secretary may remove species "…if such data substantiate that it is neither endangered nor threatened for one or more of the following reasons: (1) *extinction*… (2) *recovery* … a point at which protection under the Act is no longer required… (3) *original data* for classification in *error*."[10] (emphasis added). While regulations equate the point at which a species no longer requires protection under the ESA with "recovery," the statute does not require that the species' numbers or distribution be returned to some historic peak but only to the point at which the factors used to determine endangered or threatened status are no longer met.

Forty species have been removed from the endangered species list since the ESA was enacted. These include both foreign and domestic species and species that were determined to have recovered, gone extinct and to have been added to the list on the basis of erroneous data. (Based on the FWS delisting notice, Hoover's woolly star, a plant, is counted twice below. It is counted once among "recovered" and once among species being delisted on the basis of "erroneous data." (See Appendix 1.))

Seven foreign species were delisted on the basis of recovery or erroneous data (See notes 11-13):

- Eastern gray kangaroo (*Macropus giganteus*)[11]
- red kangaroo (*Macropus rufus*)
- Western gray kangaroo (*Macropus fuliginosus*)
- Indian flap-shelled turtle (*Lissemys punctata punctata*)[12]
- Palau ground dove (*Gallicolumba canifrons*)[13]
- Palau fantail flycatcher (*Rhipidura lepida*)
- Palau owl (*Pyroglaux podargina*)

Nine domestic delisted species were delisted due to extinction:

- Guam broadbill (*Myiagra freycineti*)[14]
- longjaw cisco (*Coregonus alpenae*)[15]
- amistad gambusia (*Gambusia amistadensis*)[16]
- Mariana mallard (*Anas oustaleti*)[17]
- Sampson's pearlymussel (*Epioblasma sampsoni*)[18]
- blue pike (*Stizostedion vitreum glaucum*)[19]
- Tecopa pupfish (*Cyprinodon nevadensis calidae*)[20]
- Santa Barbara song sparrow (*Melospiza melodia graminea*)[21]
- dusky seaside sparrow (*Ammodramus maritimus nigrescens*)[22]

Fifteen domestic species were delisted due to erroneous data (see notes 23-37):

- Bahama swallowtail butterfly (*Heraclides andraemon bonhotei*)[23]
- Cuneate bidens (*Bidens cuneata*)[24]
- Lloyd's hedgehog cactus(*Echinocereus lloydii*)[25]
- Mckittrick pennyroyal (*Hedeoma apiculatum*)[26]
- Mexican duck (*Anas "diazi"*)[27]
- purple-spined hedgehog cactus (*Echinocereus engelmannii var. purpureus*)[28]
- Pine Barrens tree frog (*Hyla andersonii*)[29]

- Rydberg milk-vetch (*Astragalus perianus*)[30]
- Southeastern dismal swamp shrew (*Sorex longirostris fisheri*)[31]
- spineless hedgehog cactus (*Echinocereus triglochidiatus var. inermis*)[32]
- Truckee barberry (*Berberis (=Mahonia) sonnei*)[33]
- Tumamoc globeberry (*Tumamoca macdougalii*)[34]
- coastal cutthroat trout (Umpqua River) (*Oncorhynchus clarki clarki*)[35]
- gray wolf) (*Canis lupus*) (grey wolves remain listed under the ESA; this action reflected the "delisting of all other lower 48 states or portions of lower 48 states not otherwise included in the 3 distinct population segments")[36]
- Hoover's woolly star *(Eriastrum hooveri)*[37]

The following ten domestic species were determined to have recovered.

American Alligator (*Alligator mississippiensis*): Technically "threatened by similarity of appearance,"[38] the alligator was first listed as threatened with extinction in 1967 under a law that preceded the ESA of 1973.[39] It was delisted as a 'recovered' species on June 4, 1987.[40]
The alligator's population dynamics were misunderstood at the time of listing. Writing for the National Wildlife Federation, T.A. Lewis recognized that the "familiar and gratifying" recovery story of the alligator was "mostly wrong."[41]

American Peregrine Falcon (*Falco peregrinus anatum*): The falcon was first listed on June 2, 1970 and delisted on August 25, 1999.[42] According to the FWS, "[t]he most significant factor in the recovery of the peregrine falcon was the restriction placed on the use of organochlorine pesticides. The use of DDT was banned in Canada in 1970 and in the United States in 1972…" the FWS also states, "[i]n the eastern United States, where peregrine falcons were extirpated, the initial recovery objective was to reestablish peregrine falcons through the release of offspring from a variety of wild stocks being held in captivity by falconers. The first experimental releases of captive-produced young occurred in 1974 and then in 1975 in the United States. Since then, approximately 6,000 falcons were released throughout its historic range in North America. These releases helped to re-establish breeding pairs in areas where the species was extirpated, and accelerated the recovery of the species."

"The peregrine restoration was the largest species recovery program ever accomplished, extending throughout much of North America, lasting more than three decades, and even including collaboration with Europeans," according to the leading experts on peregrine falcons.[43] In a recent paper, these experts state:

> Why did Peregrine Restoration succeed? First and foremost, the cause of the decline of the species (DDT) was greatly reduced in the environment. Second, about 7,000 falcons were released to the wild where peregrine populations were extirpated or greatly reduced…This was facilitated by widespread cooperation

> and support led by a core group of dedicated peregrine enthusiasts, mostly falconers, who possessed considerable knowledge about the species. Peregrine restoration was largely a privately led enterprise. Third, state wildlife departments and federal land management agencies contributed importantly to the recovery program…
>
> Fourth, although restoration of the peregrine would have occurred even if the ESA had not existed, it is unlikely to have achieved the same level of success. The ESA provided a platform for cooperation, particularly among government agencies, and added a new source of funding, although much of it was consumed by government bureaucracy and not used for actual recovery implementation. Section 6 funding may have been the most important financial aspect for overall recovery. An annual appropriation earmarked by Congress for the Peregrine Fund for a number of years was also very important and enhanced our level of participation…Finally, despite the FWS having the authority for implementing the ESA, and a number of their biologists contributing importantly to the recovery program, as an agency the FWS had a limited role, and its law enforcement division, which was in charge of issuing permits as well as enforcing regulations, was regularly an obstacle to recovery actions (Burnham and Cade 2003b).

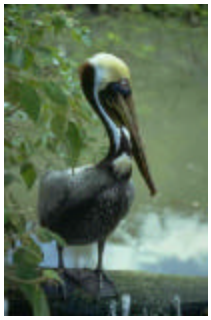
Aleutian Canada Goose (*Branta canadensis leucopareia*): The Aleutian Canada goose was listed on March 11, 1967 and delisted on March 20, 2001. [44] Regarding this Canada goose subspecies, the FWS states, "[a]t the time of its listing, data on which to base a population estimate of Aleutian Canada geese were limited. Boeker … speculated during a 1963 expedition that only 200– 300 birds were on Buldir Island. We believed breeding birds to be confined to that one island, and the migration routes and wintering range were uncertain. A spring count at a principal migration stopover near Crescent City, California, in 1975 revealed 790 individuals… We subsequently found small breeding groups of Aleutian Canada geese on Kiliktagik Island … and on Chagulak …" the FWS also states that, "[t]he decline of the Aleutian Canada goose was primarily the result of the introduction of Arctic foxes … and, to a lesser extent, red foxes … to its breeding islands" and that "removal of foxes from potential nesting islands" was one of the important features of the recovery program. According to the Service, "[i]nitial population increases of Aleutian Canada geese were likely in response to hunting closures in California and Oregon to protect the geese during migration and during winter. However, a substantial increase in numbers was dependent on reestablishing geese on former nesting islands. … Once the number of geese on Buldir Island was large enough, we initiated translocation of wild geese from Buldir Island to other fox-free islands… As new breeding colonies became established in the Aleutian Islands, the number of Aleutian Canada geese increased rapidly."

Arctic Peregrine Falcon (*Falco peregrinus tundrius*): The falcon was listed June 2, 1970 and delisted on October 5, 1994.[45] According to the FWS, "[f]ollowing restrictions on the use of organochlorine pesticides, reproductive rates in arctic peregrine falcon populations increased and populations began to expand by the mid- to late- 1970s. By 1984, the recovery of arctic peregrine falcons had progressed sufficiently that the USFWS reclassified the subspecies from endangered to threatened…The number of arctic peregrine falcons continued to increase. By 1991, the USFWS announced that it was reviewing the status of the threatened arctic peregrine falcon to determine if a proposal to delist was appropriate…"

(Michael T. Sedam)

Columbian White-tailed Deer (*Odocoileus virginianus leucurus*): One of 30 subspecies of white-tailed deer in North and Central America, this deer inhabiting counties in Oregon and Washington was first listed as endangered in 1967. Only those occurring in Oregon's Douglas County (a distinct population segment) were delisted on July 24, 2003.[46] The deer remains designated as endangered in Columbia, Clark, Cowliz, Pacific, Skamania, and Wahkiakum Counties in Washington and in Clatsop, Columbia, and Multnomah Counties in Oregon.[47]

1978 amendments to the ESA introduced the term distinct population segment (DPS), a term not originating in biology but in law. This classification is reserved to vertebrates and legislative history reveals it was to be used sparingly.[48] According to the FWS, the distinct population segment of the subspecies in Douglas County has recovered primarily because of "…habitat acquisition and management for the deer, hunting restrictions, and the application of local ordinances, designed to protect the Douglas County DPS."



Eastern Population of Brown Pelican (*Pelecanus occidentalis*): The pelican was listed on June 2, 1970 and delisted on July 5, 1984.[49] According to the FWS: "[p]opulation data gathered since the listing have questioned the likelihood that the pelican population in Florida was ever endangered, as defined by the Act. This designation was also questionable for the pelican in South Carolina. The data was not in existence at the time of listing and the most prudent course of action, based upon the best available data at that time, was to list the entire species as endangered." According to the FWS, "organochlorine pesticide pollution apparently contributed to the endangerment of the pelican."

Gray Whale (*Eschrichtius robustus*): The gray whale was listed as endangered June 2, 1970 and delisted on June 16, 1994.[50] Although the species population is high in the Pacific, some trend data may indicate that its population has been growing since 1890, over 80 years prior to the enactment of the ESA.[51]

Hoover's woolly-star (*Eriastrum hooveri*): Hoover's woolly-star was first listed on July 19, 1996 and delisted on October 7, 2003. [52] Although delisted in part on the basis of recovery, according to the FWS, "[a] total of 1,128 new sites have been found on BLM land. Along with the increase in the number of sites, the distribution and range of [Hoover's woolly star, a plant] has increased…The species has greater abundance, range and distribution than previously thought."

Robbins' cinquefoil (*Potentilla robbinsiana*)**:** This flower was listed on September 17, 1980 and delisted on August 27, 2002.[53] According to the FWS, factors contributing to the recovery of Robbins' cinquefoil, included transplanting to establish and augment populations and rerouting of a hiking trail.

Tinian monarch (*Monarcha takatsukasae*)**:** This bird was first listed on June 2, 1970 and delisted on September 21, 2004. [54] According to the 1987 FWS notice reclassifying this bird from endangered to threatened status, "[b]iologists who have visited Tinian over the last 10 years have commented on the general abundance of the monarch (Owens 1974; Pratt et al. 1979), and the forest bird surveys conducted by the Service in 1982 found the monarch to be the second most abundant bird on the island with a population estimate of 40,000..." Although this bird was delisted on the basis of recovery, one of the above citations regarding the Tinian monarch's abundance is dated only one year after the ESA was enacted.

V. Reclassified Species

All species reclassified by the FWS as of December 2004 were reviewed to determine the degree to which these reclassifications reflect progress in recovering species and what kinds of actions contributed to improving these species' statuses. Under the ESA, species are reclassified by downlisting from endangered to threatened or elevated from threatened to endangered. Downlisting indicates that the threats faced by the species are believed to have been reduced while elevating a species from threatened to endangered indicates the opposite. Consequently, downlisting species because threats have actually been reduced can indicate improvement of the status of a species' condition.

Given the age of the ESA and the current number of listed species, the 33 reclassifications as of December 2004 provide limited evidence of progress. Erroneous data was a contributing factor in at least ten of 19, or over 50percent of the downlisted domestic species. Among the ten domestic downlisted species that were not primarily attributable to erroneous data, non-regulatory management activities such as the use of hatcheries, propagation, cultivation, transplanting, reintroductions, and predator control were contributing factors in a majority of cases. In eight of ten cases downlisting allowed more flexible management permitted with listing as a threatened species rather than as an endangered species. More rigid endangered species restrictions can hinder management.[55]

Breakdown of the 33 reclassified species

- Six species were reclassified from threatened to endangered indicating that threats faced by the species were increased:

  -Schaus swallowtail butterfly (*Heraclides aristodemus ponceanus*)[56]
  -Alabama cavefish (*Speoplatyrhinus poulsoni*)[57]
  -chinook salmon (fall Snake River) (*Oncorhynchus (=Salmo) tshawyscha*)
  -chinook salmon (spring/summer Snake River) (*Oncorhynchus (=Salmo) tshawyscha*)[58]
  -chinook salmon (winter Sacramento River) (*Oncorhynchus (=Salmo) tshawyscha*)[59]
  -Steller sea-lion (western population) (*Eumetopias jubatus*)[60]

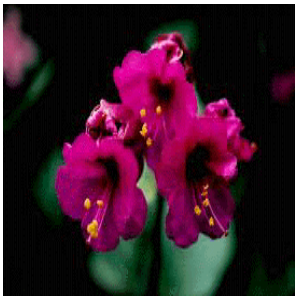
- Eight reclassified species are foreign:

  -argali (*Ovis ammon*)[61]
  -Yacare caiman (*Caiman yacare*)[62]
  -chimpanzee (wild) (*Pan troglodytes*)
  -chimpanzee (captive) (*Pan troglodytes*)
  -pygmy chimpanzee (*Pan paniscus*)[63]
  -Nile crocodile (*Crocodylus niloticus*)[64]
  -saltwater crocodile (*Crocodylus porosus*)[65]
  -leopard (*Panthera pardus*)[66]

- Nine domestic species were downlisted in whole or in part because earlier data was shown to be erroneous:

  -Mariana fruit bat (=Mariana Flying Fox) (*Pteropus mariannus mariannus*)[67]
  -Missouri bladderpod (*Lesquerella filiformis*)[68]
  -Siler pincushion cactus (*Pediocactus (=Echinocactus, =Utahia) sileri*)[69]
  -Maguire daisy (*Erigeron maguirei*)[70]
  -snail darter (*Percina tanasi*)[71]
  -MacFarlane's four-o'clock (*Mirabilis manfarlanei*)[72]
  -Louisiana pearlshell (*Margaritifera hembeli*)[73]
  -small whorled pogonia (*Isotria medeoloides*)[74]
  -large-flowered skullcap (*Scutellaria montana*)[75]

Data gathered after these species were included on the ESA list revealed erroneous original data as regards the threat facing the species including possible underestimations of a species' population, numbers or distribution data. These factors justified reclassification.



MacFarlane's Four-O'clock: listed in October, 1979, surveys increased known plants from 725 to 7,212.

Large-flowered skullcap: listed in June, 1986, surveys increased known plants from 6,700 to more than 50,000.

Maguire daisy: listed in September, 1985, two varieties formerly considered distinct were combined, substantially increasing the distribution and abundance of the taxon.

Missouri bladderpod: listed in January, 1987, surveys increased known sites from 4 to 63.

Small whorled pogonia: listed in September, 1982, surveys increased known sites from 17 to 104.

Downlisting Based on Reduced Threats

Ten domestic species were downlisted because their statuses improved which improved management flexibility with regard to several of these species.

Bald eagle (*Haliaeetus leucocephalus*): The bald eagle was determined to be endangered in the lower 48 states in 1967, and was downlisted on March 11, 1995. The bald eagle is found throughout the lower 48 states and in other parts of North America. Its reclassification reflects a rather dramatic improvement of the species status. Like the peregrine, much of the improvement is generally attributed to the ban on DDT. The FWS has placed a high priority on eagle conservation activities and expended substantial resources on the species. The bald eagle has rebounded sufficiently that, despite its continued listing, many experts do not believe it is biologically threatened. A recent paper by birds of prey experts states, "[t]he bald eagle, for example, was originally proposed by FWS for delisting 10 years ago, but action has been held up by those who are concerned about the adequacy of habitat protection after the eagle is removed from the list – a misapplied application of the "precautionary principle."[76]

Gray wolf (*Canis lupus*): Gray wolves were first listed as endangered in 1967. Two gray wolf DPS's were downlisted in 2003. The reclassification reflected substantial growth in numbers, and a reduction in what was believed to be the historic range of the eastern DPS. The reclassifications also allowed more flexible management (taking "problem" wolves to respond to wolf – human conflict) that has been anticipated to increase as more wolves dispersed from well established core areas.[77]

Tiger salamander (*Ambystoma californiense*): California tiger salamanders were listed as endangered in 2000 and downlisted to threatened in 2004. Changing the salamander's status from endangered to threatened reflected the combining of groups of salamanders that had previously been treated separately. Reclassification also improved management flexibility. Listing tiger salamanders as threatened allowed the FWS to promulgate what is known as a 4d rule. The rule exempted routine ranching practices from the ESA's "take' prohibition. On the whole, ranching is viewed as beneficial to these salamanders in its impact as this kind of land use provides suitable habitat and stock ponds where breeding may occur. An endangered status which prohibits take of species backed by threat of civil and criminal prosecution is viewed as discouraging ranching and thereby encouraging the conversion of ranching land into uses more deleterious to the species. [78]

<u>Four trout species:</u> Apache trout (*Oncorhynchus apache trout*), Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*), Paiute cutthroat trout (*Oncorhynchus clarki seleniris*)[79], and greenback cutthroat trout (*Oncorhynchus clarki stomias*)[80]: The Apache trout was listed in 1967 and inhabits Arizona. The Lahontan cutthroat was listed in 1970 and inhabits California, Utah, Nevada and Oregon. The greenback cutthroat and Paiute cutthroat were listed in 1967 and inhabit Colorado and California respectively. The reclassification of these four trout species reflected captive propagation in hatcheries, introductions of fish into the wild, habitat restoration and control of brown and rainbow trout. All these trout subspecies are game fish and threatened status also allows sport fishing.

Apache Trout[81]

Lahontan Cutthroat Trout[82]

Greenback Cutthroat Trout[83]

Paiute Cutthroat Trout[84]

(www.enature.com)

<u>Utah prairie dog</u> (*Cynomys parvidens*): The Utah prairie dog which was listed as endangered in 1973 and downlisted to threatened in 1984, occurs in Utah as implied by its common name. The reclassification of this rodent reflects identification of additional populations, the transplant of growing extant populations to other sites and allowed promulgation of 4d rule so populations could be controlled.[85]

<u>Virgina round leaf birch</u> (*Betula uber*): The Virginia round leaf birch, a species of tree known to occur in Virginia, was listed as endangered in 1978 and downlisted in 1994. The reclassification of this tree reflects recovery actions such as cultivation and transplanting of specimens as well as preservation of germ plasma. Additionally, information reported in the rule downlisting the Virginia round leaf birch indicated a close relationship to the sweet birch.[86]

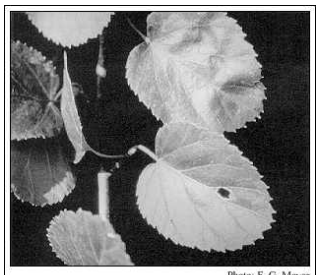


Photo: F. G. Meyer

Virginia Round-leaf Birch

VI. Report to Congress

The ESA requires a report to be produced and provided to Congress every two years on the status of efforts to develop and implement recovery plans and on the status of all species for which plans have been developed. The FWS also chooses to provide information regarding species for which recovery plans have not been developed in its "Report to Congress."

Generally, the FWS report includes a narrative assessment of the program and overview of the data provided for the relevant species. The FWS report includes information specific to each listed species including:

- the FWS region with lead responsibility for the species
- the dates of the species' first/final recovery plan and of the most current recovery plan (when applicable) as well as the stage of development of the recovery plan (finals, draft, revision)
- the species' current listing classification (endangered or threatened)
- the species' recovery priority number
- the species' status trend and
- a value indicating a percentage range of recovery that has been achieved.

Unless otherwise indicated, the following information is drawn from the FWS reports that cover a larger number of species than the NMFS report.

Recovery Priority

Recovery priorities are assigned to each species on a scale from 1 to 18. The numbers are based upon the degree of perceived threat faced by a species, the species' recovery potential and taxonomic distinctness. Threats are categorized as 'high,' 'medium' or 'low' and recovery potential is categorized as 'high' or 'low.' Species (as legally defined) are considered on the basis of the taxonomic divisions of monotypic species, species and subspecies. DPS's are generally considered with subspecies. Animals or plants that are more highly distinctive or represent isolated gene pools are ranked higher (i.e. monotypic species are prioritized over species that belong to a genus with several species, which are prioritized above subspecies and DPS's). Furthermore, the addition of 'c,' to any priority number indicates a listed plant or animal is in conflict with human activities. A species in conflict is ranked above a species that has an equivalent numerical rank but is not in conflict.

Figure 1

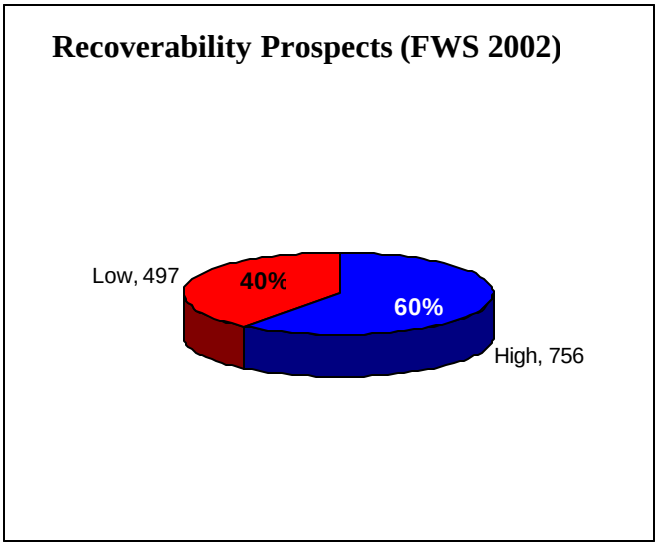


Figure 2

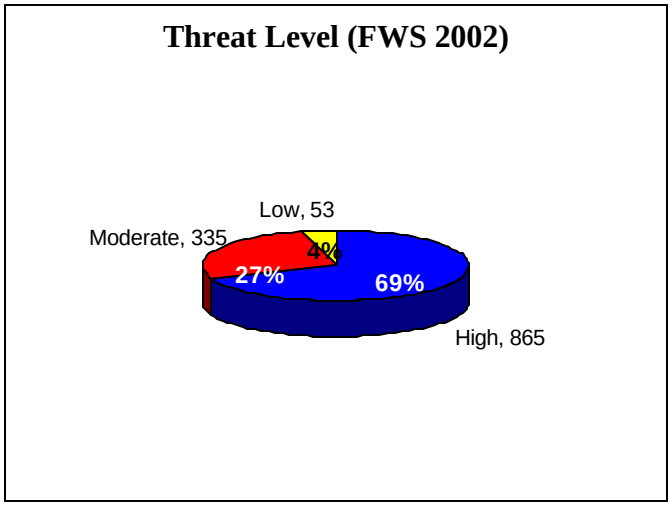


Table 1

FWS Listings by Priority (2002)

Threat Degree	Recovery[87] Potential	Rank	Number[88]	Taxon
high	high	1	23	monotypic
	high	2	275	species
	high	3	122	subspecies
	low	4	16	monotypic
	low	5	351	species
	low	6	78	subspecies
moderate	high	7	12	monotypic
	high	8	202	species
	high	9	75	subspecies
	low	10	0	monotypic
	low	11	39	species
	low	12	7	subspecies
low	high	13	2	monotypic
	high	14	38	species
	high	15	7	subspecies
	low	16	0	monotypic
	low	17	5	species
	low	18	1	subspecies

92 percent of the species covered in the FWS report fall in the upper half of the ranking system between (i.e. recovery priority 1 to 9). In fact, over 69percent of the species covered by the report fall in the top 6 of 18 ranks. **The fact that 92percent are in the upper half of the ranking system raises questions with regard to the individual assignment of the threat values, the ranking system or both**. Similarly, **about 38 percent of the species that are classified as facing a 'low' threat are species that are listed as 'endangered' rather than 'threatened.'** Despite this, according to the FWS, "[t]he distinction between Threatened and Endangered species occurs in the Degree of Threat criterion. It is generally understood that the degree of threat is greater for Endangered species than for Threatened species."[89]

Recovery Achieved

Recovery achieved data is to provide an "estimate of the extent to which the recovery objectives for each species has been achieved."[90] According to the FWS this measurement is neither the "proportion of the number of discrete actions in the recovery plan that have been completed (e.g., 33 actions out of 100)," nor an assessment that "one

of four objectives have been met." According to the FWS, recovery achieved reflects the overall progress towards the recovery goal of downlisting (a change in status from endangered to threatened) or delisting. Recovery achieved is indicated with a value ranging from 1 to 4 that corresponds to the following percentile intervals:

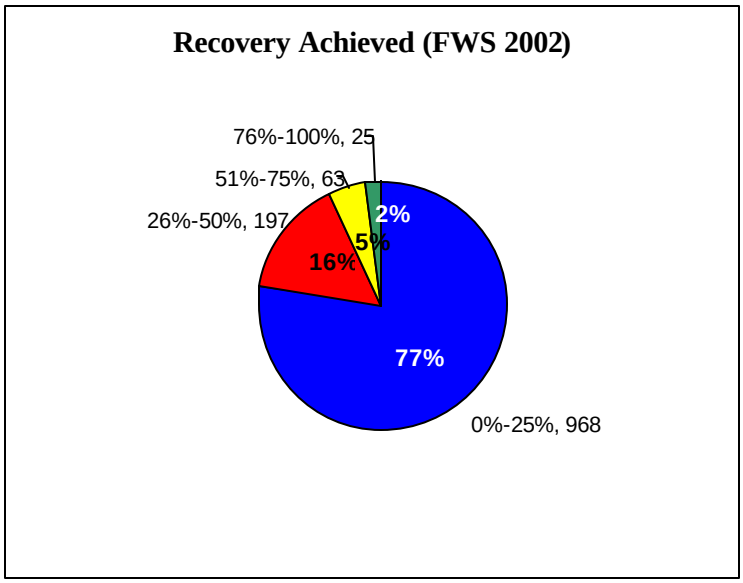
1 = 0 -25 percent	recovery achieved
2 = 26 -50 percent	recovery achieved
3 = 51 -75 percent	recovery achieved
4 = 76 -100 percent	recovery achieved

In the FWS's 2002 report, 25 species or 2 percent ranked recovery achieved 4 or in the 76 - 100 percent bracket. There are species within this group such as the bald eagle that have increased substantially in number and distribution and for which many threats have been significantly reduced. However, **the recovery achieved measure is subjective and higher achievement may also reflect factors other than actual reductions in the threat faced by a species. Higher recovery achieved rankings may reflect factors such as a reduction in a perceived threat through the establishment of regulations or laws that alleviate what biologists believed were 'inadequate regulatory mechanisms.' Higher rankings may also reflect corrections to inaccurate threat assessments resulting from erroneous data that indicated that the species was less plentiful or less widely distributed than it actually is.** Such new information **may result in the assessment that a species is closer to meeting goals, objectives or criteria than previously believed.** A number of the 25 species in the highest recovery achieved bracket were found to be more abundant and/or widespread after listing. This is the case, for example, with the Uinta Basin hookless cactus, [91] running buffalo clover, [92] Truckee barberry, [93] Eggert's sunflower[94] and Johnston's frankenia.[95] In fact, the latter three have been or are proposed for delisting because new information revealed earlier data was erroneous.

For example, Johnston's frankenia, a plant occurring in Texas, was reported to have achieved 76 percent or more of its recovery objectives in the FWS 2002 Report to Congress. Johnston's frankenia was listed in 1984 and data at the time indicated there were some 1,500 individual specimens. Since listing, surveys have resulted in a population estimate of greater than 9,000,000 individual plants.[96]

Other 'recovery achieved - 4' species include the Tinian monarch, Hawaiian hawk, and Virginia round leaf birch. The threat to the Tinian monarch, as addressed previously, was overestimated. This may also be the case with the Hawaiian hawk. FWS actually proposed downlisting this bird in 1993 and the proposal recounts the speculative nature of the species' assumed decline. The notice also reveals the hawk has adapted to altered habitat and may include invasive species in its prey base.[97] The Virginia round leaf birch, also previously addressed, is in this group as well. For about 25 percent or more of the species in the highest recovery achieved bracket, erroneous data was a contributing factor to the ranking.

Figure 3



Species Status

Species status is a qualitative assessment of the trend in the threats faced by and numbers of a species. The possible values range from 'possibly extinct' to 'improving' and include[98]:

I = Improving: species that have numerically increased while threats were constant or reduced; or, a species that has had constant numbers and reduced threats.

S = Stable: numbers and threats have been constant.

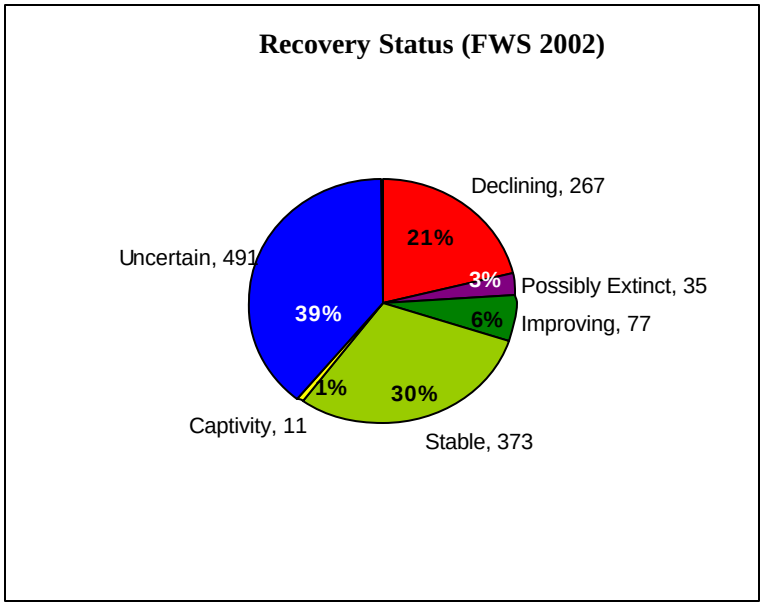
D = Declining: decreasing in numbers and/or increasing threats.

U = Uncertain: current trend uncertain.

C = Captivity: species known only from captive individuals / populations.

E = Possibly Extinct.

Figure 4



As few species have been delisted and downlisted, the status of species is often referred to as a means of measuring the performance of the ESA. According to a recent paper in Conservation Biology, "[d]espite the small number of officially recovered species, the ESA ***may have*** effectively prevented as many as 192 extinctions (Schwartz 1999)." [99] (emphasis added) Making such statements with a caveat is prudent. The same paper reports, "[t]he quality of these data is inconsistent and of questionable accuracy, however, because trends for some species ***are simply the best guesses*** of USFWS personnel (Boersma et al. 2001)." (emphasis added)

In its 2002 report, the FWS indicated the status of some 77 species (or 6 percent) was 'improving' while 373 species or 30 percent were "stable." Among these are some of the higher profile species such as the grizzly bear, whooping crane, red-cockaded woodpecker and California condor, all of which have benefited from conservation efforts.

The assignment of the status "stable" or "improving" for a species may, however, reflect factors other than actual increases in the species' numbers or distribution, or the reduction of accurately assessed threats. Rather such **a "stable" or "improving" status may indicate a reduction in perceived threats resulting from the establishment of "adequate regulatory mechanisms" or even new data that shows earlier assessments of threats faced by a species that were based upon an underestimated population or distribution are in error.** For example, among the species reported to be improving or stable in the FWS's 2002 report are the gray bat, Ozark big-eared bat, Virginia big-eared bat, Virginia northern flying squirrel, Utah prairie dog, Virgin Islands tree boa, Ozark cavefish, snail darter, cheat mountain salamander, American burying beetle, flat-spired three-toothed snail, *geocarpon minimum*, Hoover's woolly-star, large-flowered skullcap, Macfarlane's four o'clock, Maguire daisy, Missouri bladderpod, northeastern bulrush, Pitcher's thistle, running buffalo clover, small-whorled pogonia, swamp pink, watercress

darter and Uinta Basin hookless cactus.[100] After being listed the numbers or distribution of all of these species was shown to be greater than originally believed.

As regards the swamp pink, the 1992 Report to Congress indicated that after listing, "[a]pproximately 20 previously unknown populations have been discovered in New Jersey," "Five previously unknown swamp pink occurrences have been located in Delaware" and in North Carolina there was a "…discovery of a spruce bog population consisting of 100,000 plants on Forest Service lands."[101]

Similarly, the 2002 report indicates that the Uinta Basin hookless cactus, which has been listed since 1979 as threatened is stable. In fact, this cactus has been consistently classified as stable and the 1990 Report to Congress indicated that original data used in listing this species was inaccurate enough that the "[p]ossibility of delisting [the Uinta Basin hookless cactus would] be evaluated based on new information on species abundance."[102]

Uinta Basin hookless cactus

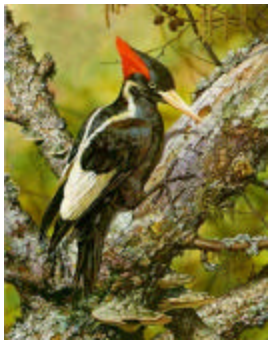
The same 1990 report indicated that, "[p]opulation and habitat inventories have identified a greater abundance, range distribution, and additional populations of [the Wright fishhook cactus] than originally known" and states, "[e]valuation will be undertaken to consider delisting." This species is also classified as stable in the 2002 report.

Of the above improving and stable examples the change in earlier erroneous data was significant enough to contribute to the downlisting or delisting of the snail darter, Hoover's woolly-star, large-flowered skullcap, Macfarlane's four o'clock, Maguire daisy, Missouri bladderpod and small-whorled pogonia as has been previously addressed.

The 2002 report also classifies some 3 percent of or 35 listed species covered by the Report as "possibly extinct." The recovery plan for three mussels that are assessed as possibly extinct states, "[t]he ultimate goal… is to locate, maintain, and enhance any known populations…" but that "it is highly improbable, if and when living specimens of any one of the three subject species are found that… the species can ever recover to the point of delisting."[103]

Of the 35 species that are possibly extinct all but one, Frostburg's love grass, have been listed more than a decade. Twenty-two have been listed for more than two decades and half of these were listed under a law that preceded the Endangered Species Act of 1973. Some of these species have likely been extinct for decades, even prior to passage of the ESA. Since the 2002 report, only two of the possibly extinct species, the Guam broadbill and Mariana mallard, have been delisted. Other species that are assessed as unknown may be extinct. For example, FWS Threatened and Endangered Species Database System (TESS) indicates that the Maryland darter which is assessed as uncertain in the 2002 report is possibly extinct.[104]

Several considerations likely affect the FWS treatment of species that are possibly extinct. For example, the FWS must consider the possibility that the species could be 'rediscovered.' A recent and dramatic example of this was the discovery of ivory-billed woodpeckers that had not been reliably documented since the 1940s.



Museum specimen of the ivory-billed woodpecker

Of all the species assessed as possibly extinct, the ivory-billed woodpecker would, in some respects, be one of the least likely to evade detection and do so for decades. This is a large bird, similar in size to a crow, and the largest woodpecker in the United States. It has a somewhat striking appearance given its size, large wingspan, distinctive white and black markings and colored crest. While, the ivory-billed woodpecker can be mistaken for another similar woodpecker, it can be distinguished by its physical features as well as by its flight pattern and vocalizations. The type of habitat the species occurs in is known and a breeding pair is believed to require about three square miles of habitat. These facts about the bird are well known to birders and with an implicit reference to rediscovering the bird, the ivory-billed woodpecker has been referred to by some as the 'holy grail'. While the ivory-billed woodpecker's historic range is large and the species' habitat can be difficult to survey, considerable effort over many years has been exerted by both wildlife officials and numerous avid birders to find any living specimens. While reports had surfaced over the decades there had been no documentation of living ivory-billed woodpeckers accepted as reliable until recently.

The fact that the existence of this species escaped detection for decades raises an obvious question about the reliability of data regarding the numbers and distribution of other species that have not been extensively searched for, are recognized by far fewer people and about which there is less life history information. While this question is applicable to species that have been classed as possibly extinct, it also applies to many other species that have or may have been determined to be endangered on the basis of erroneous data like Johnston's frankenia, Hoover's woolly star.

In addition to the possibility of rediscovering a species, FWS may consider delisting actions in the context of other ESA program demands. Further, delisting a large number of species, approaching the total number of delistings over the program's history, may be perceived as reflecting negatively on the ESA.

Listed species that are reported to be possibly extinct as of the 2002 Report to Congress include:

1. Alani (*Melicope balloui*). According to the recovery plan, "[s]pecies is rare and known from only 9 collections, the last occurring in 1927…" and there is "…little accurate information regarding size and distribution of population."[105]

2. Alani (*Melicope quadrangularis*). According to the recovery plan only 13 individuals of species known as of 1994.[106]

3. Bachman's warbler (=wood) (*Vermivora bachmanii*). According to the recovery plan it is "presumed near extinction--no known localities of regular occurrence in since early 1970's (Cuba)" [sic][107]

4. Black clubshell (*Pleurobema curtum*). According to the recovery plan "fresh dead" specimens were last found in 1989.[108]

5. Bridled white-eye (*Zosterops conspicillatus conspicillatus*). According to the recovery plan it was last observed June 1983.[109]

6. Eastern Puma (=cougar) (*Puma (=Felis) concolor couguar*). According to the recovery plan there have been no breeding cougar populations substantiated since the 1920's.[110]

7. Eskimo curlew (*Numenius borealis*).

8. Flat pigtoe (*Pleurobema marshalli*). According to the recovery plan none were found alive during 1987 and 1988 surveys.[111]

9. Fosberg's love grass (*Eragrostis fosbergii*). According to the recovery plan it was thought extinct until 6 individuals were rediscovered in 1991.[112]

10. Green blossom pearlymussel (*Epioblasma torulosa gubernaculums*).

11. Guam broadbill (*Myiagra freycineti*). (This species was delisted as extinct in 2004.)[113]

12. Haha (*Cyanea copelandii ssp. copelandii*). According to the recovery plan it was last collected 1957.[114]

13. Ha`iwale (*Cyrtandra crenata*). According to the recovery plan a "[p]opulation has not been observed since 1947, and there are no other known individuals."[115]

14. Holei (*Ochrosia kilaueaensis*). According to the recovery plan it was last collected in 1927 and the last sighting was in the1940s.[116]

15. Ivory-billed woodpecker (*Campephilus principalis*). This species has been recently rediscovered.

16. Kauai akialoa (honeycreeper) (*Hemignathus procerus*). According to the recovery plan the species was last seen and collected in late 1960s.[117]

17. Kauai o`o (honeyeater) (*Moho braccatus*). According to the recovery plan there have been no sightings or observed vocalizations since 1987.[118]

18. Large Kauai thrush (*Myadestes myadestinus*). According to the recovery plan the last sighting was in 1989.[119]

19. Liliwai (*Acaena exigua*). According to the recovery plan the species has not been found since 1957.[120]

20. Mariana mallard (*Anas oustaleti*). (This species was delisted as extinct in 2004.)[121]

21. Maui akepa (honeycreeper) (*Loxops coccineus ochraceus*). According to the recovery plan there has been no "reliably detectable population" since 1970.[122]

22. Molokai thrush (*Myadestes lanaiensis rutha*). According to the recovery plan the species was last seen in a "fleeting glimpse" in 1988.[123]

23. Molokai creeper (*Paroreomyza flammea*). According to the recovery plan there have been no sightings since 1963.[124]

24. Oahu creeper (*Paroreomyza maculate*). According to the recovery plan the last "well documented sighting" was in 1985.[125]

25. O`u (honeycreeper) (*Psittirostra psittacea*). According to the recovery plan the last confirmed sightings were in late 1970's.[126]

26. *Phyllostegia glabra var. lanaiensis*. According to the recovery plan the species was last collected in 1914.[127]

27. San Marcos gambusia (*Gambusia georgei*). According to the recovery plan the last specimen was found 1982.[128]

28. Scioto madtom (*Noturus trautmani*). According to the recovery plan the species is possibly extinct.[129]

29. Southern acornshell (*Epioblasma othcaloogensis*). According to the recovery plan the species has not been found in decades.[130]

30. Stirrupshell (*Quadrula stapes*). According to the recovery plan a fresh dead shell was last found in 1986.[131]

31. Tubercled blossom pearlymussel (*Epioblasma torulosa torulosa*).

32. Turgid blossom pearlymussel (*Epioblasma turgidula*).

33. Upland combshell (*Epioblasma metastriata*). According to the recovery plan no living populations confirmed recently.[132]

34. Yellow blossom pearlymussel (*Epioblasma florentina florentina*).

35. Little Mariana fruit bat (*Pteropus tokudae*). According to the recovery plan the last sighting was in 1968.[133]

Status of NMFS Species

Although the NMFS report only addresses a fraction of the species addressed by the FWS, the reported numbers and status of species in the narrative do not agree with the data in the report's table.[134] Figures 5 and 6 indicate the different information provided in the NMFS narrative and table. In the table "species protected by NOAA Fisheries [NMFS] under the Endangered Species Act," proposed and candidate species and salmon of the Baker River that are of 'unknown' status and for which a 'not warranted' for listing determination was made are included.

The NMFS does not provide a measure addressing recovery achieved and reports the status of several species as "mixed." The mixed status regards, for example, species of fish that have different trends in different rivers. The mixed species include: the shortnose sturgeon, chum salmon (Columbia River), coho salmon (Southern OR, Northern CA coast), steelhead trout (Snake River) and chinook salmon (Puget Sound). NMFS reports that recent trends in the natural abundance of steelhead trout (Snake River) and chinook salmon (Puget Sound) are respectively, "mixed" and "variable," and states that "[t]he status of many shortnose sturgeon populations remains unclear." The shortnose sturgeon is reported to be increasing in numbers in rivers such as the Hudson and Delaware. However, the species has reportedly had less success in other rivers with the recent sighting of the species in the Florida's St. Johns River being the first since the 1970s. The NMFS does provide more detailed descriptions of its activities for the species covered by the report. For example with regard to the Atlantic population of green sea turtles the report indicates "all priority #1 tasks have been implemented." However, no information to put this information in context is provided. Overall, the report provides a somewhat blurry picture of the program.

Figure 5

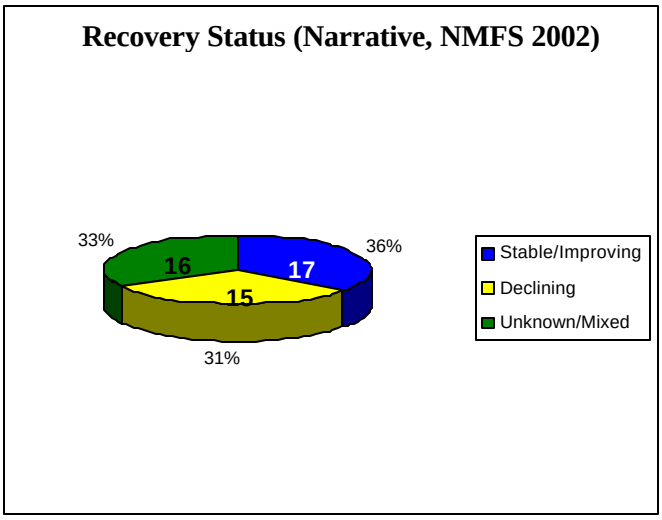
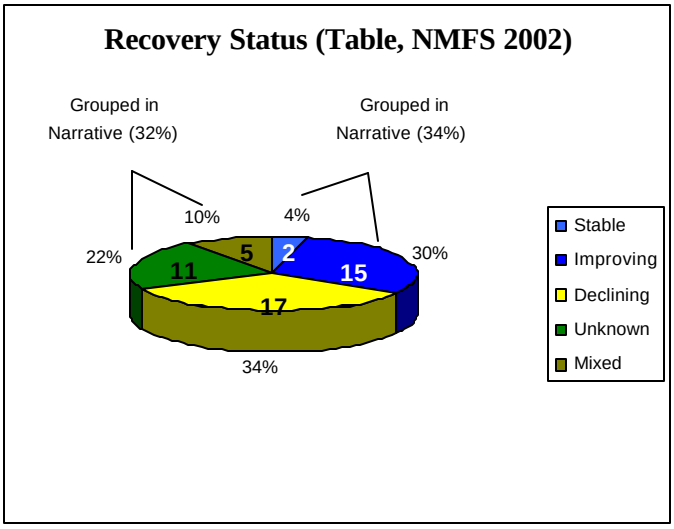


Figure 6



Relative Pace of Listing and Delistings and Program Sustainability

1982 amendments to the ESA and an accompanying conference report required that the "…priority [listing review] system address delistings as well."[135] Along the same line, the ESA provides that the Secretary may find a petitioned action is warranted but precluded (e.g. a species may merit listing but more important considerations can alleviate the obligation to do so) but a prerequisite for invoking the provision is that, "expeditious progress is being made …. to remove from such lists species for which the protections of the Act are no longer necessary."[136] These provisions recognize a need to address the removal of recovered, extinct, and erroneously listed species from the list. Just a few examples of the species that may merit delisting on basis of recovery or erroneous data include the gray wolf, bald eagle, Wright fishhook cactus, Uinta Basin

hookless cactus, island night lizard, Hawaiian hawk and American burying beetle. There are almost as many listed domestic species that are 'possibly extinct' as the total number of domestic species that have been delisted for all reasons (recovery, extinction or erroneous data). There has been limited progress in removing erroneously listed, extinct and perhaps even recovered species.

The fact that delistings have not kept pace with listings is to be expected for several reasons. For example, there were a significant number of species incorporated onto the endangered species list when the ESA was first enacted. These species were inherited from a preceding program. Additionally, the process of listing species is one that can be completed in a much shorter timeframe than the amount of time that is required for conservation activities to produce results. Numerous different factors may affect the time required for conservation activities to yield measurable results. For example, it can take many years for a species to reach sexual maturity and contribute to the population. Or, habitat manipulation may require years to conduct. When delisting species that are possibly extinct the FWS must take into account the possibility of rediscovery. Further, the listing process is in large part driven by litigation that is overwhelmingly focused on listing species and designating critical habitat. **The FWS notes in its most recent budget justification that its "litigation workload" with regard to listing includes "34 active lawsuits with respect to 48 species; 40 court orders involving 88 species; and 36 notices of intent to sue involving 104 species."**[137] (See Appendix 2 for a listing of these cases). Also, historically, the FWS has asserted a need for flexibility in prioritizing listing and delisting decisions that in some cases may favor listing actions over delisting actions.[138]

Although the pace at which listings and delistings occur is predictably different, several facts reveal that without improvements to the program, the number of listed species is likely to continue to swell:

- there has been a relatively small number of delistings (33 domestic delistings);
- the number of currently listed domestic species approaches 1,300;
- there have been few reclassifications from endangered to threatened, 77 percent of listed species are ranked at the bottom of recovery objectives achieved scale (0-25 percent) and some 60 percent are either categorized as of uncertain or declining status;[139]
- the FWS recognizes 283 candidates for listing;[140]
- there are over 6,000 species ranked as G1 ("critically imperiled") and G2 ("imperiled") on natural heritage databases some of which are likely to be petitioned and/or listed. [141]

When these facts are considered in the context of the regulatory consequences of adding species to the list, federal and state expenditures on endangered species, economic consequences of critical habitat designations and other regulatory consequences such as

the need for consultations on federal actions that may affect endangered species -- it becomes apparent that, in its current form, the endangered species program is likely not sustainable.

For example, according to the FWS, the bottom of the range of average costs for a proposed listing rule, final listing rule, proposed critical habitat rule, final critical habitat rule, and accompanying economic analysis and NEPA assessment are $75,000, $50,000 $180,000, $72,000, $150,000 and $25,000 respectively.[142] (See Appendix 3 for FWS data on these costs.) This yields a lower bound average of $552,000 in costs for adding a species to the list and designating its critical habitat. **Just listing and designating (the beginning of the ESA program) the current 283 candidates at this average cost would result in a total cost of over $150,000,000**.

Obviously the above is a simplistic assessment for several reasons. For example, these species would not all be listed simultaneously but over time. Some of the current candidates may not be listed as is evidenced by the some 70 animals and plants that have been removed from the candidate list since 1997.[143] Further, critical habitat may be determined jointly for some species. However, on the other hand, there are likely many species that have not been identified as candidates that will be considered for listing. Additionally, this assessment does not consider the costs of making 90-day and 12-month findings in response to petitions (the FWS estimates the lower bound of average costs for these actions to be $15,000 and $45,000 respectively). And, this assessment relies on the bottom of average cost range estimates. The 12-month finding for the sage grouse was estimated at $625,000 and FWS upper bound average cost estimate for proposed critical habitat is $925,000, as opposed to the lower-bound estimate of $180,000.

Further, such an assessment does not include the costs of proposed and final rules for delisting on the back end of the program and any costs associated with mandatory monitoring after a species is removed from the list. Likewise, any costs associated with possible reclassifications or costs associated with litigation support associated with challenges to these actions are not included. Just taking the low end of the average cost of proposed delisting rules (FY 05 $75,000)[144] and multiplying that by only half the currently domestically listed species (632) yields an estimate of over $47 million FY 05 dollars. Again, this is for just an unchallenged proposed rule for half of the listed domestic species. This calculation does not address costs associated with responses to petitions, final rules or legal challenges. There are also an additional 562 foreign species to consider.[145] Unlike the calculations involving candidates that might not be listed, eventually, all these listed species should be delisted as either recovered, extinct or, when new information becomes available, on the basis that the original listing data was erroneous.

While the process of delisting species does require an expenditure of some funds for proposed and final rules, retaining species on the list that do not merit listing is not without cost, as is later addressed. Delisting species that do not merit listing should assist in focusing resources more effectively and improve the program's credibility.

Potentially Unrecoverable Species

The purpose of the ESA is "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species…."[146] The ESA defines "conserve" to mean "…to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which measures provided pursuant to this Act are no longer necessary."[147] As the FWS has recognized, the ultimate goal of the ESA "… is the recovery of endangered and threatened species…"[148] However, according to the FWS, "[s]ome critically endangered species may not respond due to limiting factors such as small population size that has limited or suppressed reproduction. Herculean efforts may be needed before an increase in population may be seen. ***It may even be that preventing extinction is the best that can be done with the current scientific information***, although the future may bring advances enabling the population to improve."[149] (emphasis added) While the ESA does not appear to contemplate cases in which species may be listed in perpetuity, several recovery plans reveal this possibility.

The goal of the recovery plan for three subspecies of beach mice found along the gulf coast of Florida and Alabama, the Choctawhatchee beach mouse (*Peromyscus polionotus ammobates*), the Perdido Key beach mouse (*Peromyscus polionotus trissyllepsis*) and Alabama beach mouse (*Peromyscus polionotus allophrys*) is downlisting. The plan states, "…due to the extensive and permanent loss of habitat for these beach mice, it will probably never be possible to safely remove them entirely from protection of the Act."[150] Similarly, the recovery plan for the cracking pearly mussel (*Hemistena lata*) states that, "[b]ecause of the lack of available habitat for establishment of all needed populations, recovery is unlikely."[151] Likewise, the plan for the ring pink mussel (*Obovaria retusa*) states "[t]otal recovery is not thought possible."[152]

These are not the only examples of a low recovery potential. As previously addressed, FWS reports that the recovery potential for 40 percent of listed species is low. A number of recovery plans indicate a low recovery potential having something short of delisting such as downlisting as the plan or interim plan's goal or otherwise state that the potential for recovering the species to the point at which it may be delisted is questionable. These include, for example:

- The goal of the recovery plans for Louisiana pearlshell mussel (*Margaritifera hembeli*),[153] Mariana common moorhen (*Gallinula chloropsus guami*)[154] and Mariana fruit bat (*Pteropus mariannus mariannus*)[155] is downlisting.

- According to the recovery plan for the cave crayfish (*Cambarus zophonastes*), "[d]ue to the apparent limited potential for discovering new populations, the delisting objective may never be attainable."[156]

- The flattened musk turtle's (*Sternotherus depressus*) recovery plan states, "[a]ll that can reasonably be stated now relative to the time required for recovery is that, under the best of circumstances, it will take more than three decades."[157]

- The American crocodile (*Crocodylus acutus*) recovery plan states, "[d]ue to the nature and the extent of the threats to the crocodile, complete delisting may never be possible" and that reclassification to threatened is the "long term objective."[158]

- The recovery plan for the Florida scrub jay (*Aphelocoma coerulescens coerulescens*) states, "[**b]ecause of the extreme usefulness of the Act in this case, it is not desirable to remove the scrub jay from protection under the Endangered Species Act**."[159] (emphasis added)

- "Protection of existing populations" is the goal of the Hualapai Mexican vole (*Microtus mexicanus hualpaiensis*) recovery plan. [160]

- The Loach minnow (*Tiaroga cobitis*) recovery plan calls for, "[p]rotection of existing population. Eventual delisting, if possible."[161]

- The goal of the Mount Graham red squirrel (*Tamiasciurus hudsonicus grahamensis*) recovery plan is to "[s]tabilize" the species.[162]

- According to the recovery plan for the San Bruno elfin (*Callophrys mossii bayensis*) and Mission blue butterfly (*Icaricia icarioides missioensis*), "[t]he primary object of the Recovery Plan… is to maintain and enhance existing populations…"[163]

- The spikedace (*Meda fulgida*) recovery plan calls for, "[p]rotection of the existing population. Eventual delisting, if possible."[164]

- The recovery plan for the St. Thomas prickly-ash (*Zanthoxylum thomasianum*) calls for, "[g]uidance for reversing decline… and restoring… stable, secure, and self sustaining status, thereby permitting… reclassified… and perhaps eventually allowing its removal."[165]

- The recovery plan for the Tar River spinymussel (*Elliptia steinstansana*) states, "[t]hough the ultimate goal is to recover the species to the point where it can be removed from the Federal List of Threatened and Endangered Wildlife and Plants, full recovery of the Tar River spinymussel may not be possible."[166]

- The recovery plan for the white cat's paw pearly mussel (*Epioblasma sulcata delicata = obliquata perobliqua*) states, "… protect only extant population… With such a low population level and restricted distribution, recovery to the point where the species no longer requires protection under the Act is unlikely."[167]

White Cat's paw pearly mussel

Of the above, only the crocodile is considered improving and having met 50 percent or more of the recovery objectives. Consequently, the FWS has recently announced that it

will propose downlisting the crocodile from endangered to threatened in the United States, which is at the limit of the species' range. Prospects for the Mariana fruit bat improved when it was determined that the bat had a larger range than originally believed and it was subsequently reclassified as threatened. Four of the above species are considered stable and to have met only 0 to 25 percent of the recovery objectives. The rest are declining or uncertain and fall somewhere in the 0 to 50 percent recovery achieved range.

In cases, the recovery challenges faced by a species may be an uphill battle against nature itself. For example, **several recovery plans indicate that some listed species are possibly relictual species ('relics') from earlier geological eras. For example:**

- The plan for the Desert Slender Salamander (*Batrachoseps aridus*) states, "[a]pparently it is a relictual species that had a wider distribution during wetter geological epochs."[168]

- The Iowa Pleistocene Snail (*Discus macclintocki*) recovery plan states, "[t]he plan … is intended to provide decision makers with a possible set of procedures which if implemented will result in changing the status of the Iowa Pleistocene snail minimally from endangered to threatened, and feasibly to delisted." "Thus the major long-term cause of decline is cyclic climatic change. The species has survived several such cycles in the past, however. With a return to glacial conditions it will be resuscitated over the major part of the upper Midwest, provided its relictual areas are preserved and maintained."[169]

- The recovery plan goal for the Virgin Islands tree boa (*Epicrates monensis granti*) is "[d]ownlisting" and the plan states, "[t]he species' absence from Puerto Rico is best explained by widespread extinctions of xeric-adapted herptefauna on Puerto Rico during the Pleistocene."[170]

Virgin Islands tree boa

- According to the Wyoming toad's (*Bufo hemiophrys baxteri*) recovery plan the goal is "[d]ownlisting" and it states, "[t]he Wyoming toad is a glacial relic known only from Albany County, Wyoming."[171]

Wyoming toad

- The Santa Cruz long-toed salamander (*Ambystoma macrodactylum croceum*) recovery plan goal is "[d]ownlisting" and the plan states, "[t]he SCLTS is a relict form of a species that was probably widespread throughout much of California during and immediately after the last Pleistocene ice advance, 10,000 to 20,000 years ago…"[172]

Despite information in aforementioned recovery plans that would seem to indicate a low recovery potential, 18 of 26 or almost 70 percent of these species have recovery priorities for species with a high recovery potential. This would seem to indicate that the data in the recovery plans was erroneous or the assessed recovery priorities are not accurate.

VII. Species Expenditures

Another report required under the ESA is Section 18's Species by Species Expenditure Report that is to be produced annually by FWS. These reports list the expenditures reasonably attributable to a specific species by federal agencies and by 'the states' collectively. The expenditure data include a separate accounting of expenditures on land acquisition related to specific species.

Tables 2, 3 and 4 provide expenditure data from the FWS FY 04 expenditure report. Table 2 shows the ten listings that the FWS ranked as receiving the most funds. Most of the top ten listings are fish and most of these are from the Pacific Northwest and regulated by NMFS.

In its expenditure report the FWS provides an alternative accounting of the ten "species" receiving the most funds. In this table the FWS combines listed subspecies, DPS's or evolutionary significant units that belong to the same species. This accounting reflects groupings of the same biological species that NMFS may manage separately, for example, as different evolutionarily significant units based on different spawning runs. However, it is on the basis of such differences that these species have been segregated into individually regulated subunits. The division of these fish into units endemic to a river or separated from one another based by the timing of the spawning runs can result in relatively heightened assessments of threats and have an effect on consultation and other ESA activities. This alternative top ten (as combined by the FWS) is provided in Table 3. Again most are fish with most from the Pacific Northwest and regulated by NMFS.

Table 4 presents the FWS FY 2002 expenditure data for all of the species with the highest recovery priority ranking, '1C' in the FY 01-02 Report to Congress. There are 12 such species. With the exception of the green sea turtle, the reported expenditures for these species are well below the reported expenditures for the top ten earners as reported in both Table 2 and 3. Some rank relatively low with the swamp pink, a plant, and the Comal Springs dryopid beetle ranking 603 and 726 respectively among the species covered by the report. Only 0-25 percent of the recovery objectives have been met for all 12 of the species ranked 1C. Of the twelve 1C species, six are of declining status, two are of uncertain status while three are stable and one is improving.

The GAO recently found that the FWS directs its funds to species with higher priorities but GAO notes that it made no assessment of the priority system.[173] As already addressed, the assignment of priorities is heavily skewed toward the high priority end of the scale. Consequently, even if expenditures were randomly distributed, a majority should fall in the upper third of the priority rankings. The GAO also found that, based on

a weighted average of expenditures on federally endangered and threatened animals and plants, subspecies got more than twice the funding of species despite the fact that subspecies are ranked below species as regards genetic distinctiveness. Monotypic species did receive the most funding on the weighted average basis.

Again, using the Report to Congress for FY 01-02 and the FWS FY 02 expenditure report, at the very top of the priority scale are some 121 recovery priority '1C,' '1,' and '2C' species. Using the term 'species' in its biological and not legal context, this pool includes all the highest priority monotypic species and the highest priority full species that are in conflict. This group represents roughly 10 percent of the 1,254 species covered in the most recent FWS Report to Congress and the upper-half of possible priorities among the highest threat and recovery potential FWS species. About 84 percent fall in the 0-25 percent recovery achieved class. About 50 percent are declining and 19 percent are of uncertain status. About one third of these species have been listed more than two decades, a number being listed before the ESA of 1973. 40 percent of these highest priority species fall below the median expenditure for those species with reported expenditures in FY 02. Several of these species had no reported expenditures. (It should be noted that the expenditure rankings include the NMFS species for which recovery priorities are not reported. Additionally, aggregate expenditures were provided in the Species by Species Expenditure report for the green, hawksbill and leatherback sea turtles rather than expenditures attributable to the individual listings).

Table 2: "Entities" with the largest reported expenditures in FY 2003

Top 10 listed species	Status	Agency	Priority*	Taxonomic Unit	Population Status**	Recovery Achieved***	$ Rank****	Expenditures ($K)	Expenditures ($K) including land	% Non-FWS/NMFS expenditures (including land)
Steller sea-lion (Western)	E	NMFS	Not Reported	DPS	Declining	Not Reported	1	49,514	49,514	84%
chinook salmon (Spring/Summer Snake R)	T	NMFS	Not Reported	ESU	Improving	Not Reported	2	35,577	36,012	60%
bull trout (US lower 48)	T	FWS	9c	Subspecies	Stable	0-25%	3	29,296	29,914	77%
steelhead (Snake R. Basin)	T	NMFS	Not Reported	ESU	---	Not Reported	4	23,859	24,067	59%
steelhead (Middle Columbia R)	T	NMFS	Not Reported	ESU	Improving	Not Reported	5	20,468	21,573	80%
chinook salmon (Fall Snake R)	T	NMFS	Not Reported	ESU	Improving	Not Reported	6	18,781	19,332	73%
chinook salmon (Puget Sound)	T	NMFS	Not Reported	ESU	---	Not Reported	7	15,560	16,277	68%
coho salmon (OR, CA pop.)	T	NMFS	Not Reported	ESU	---	Not Reported	8	14,925	14,925	66%
right whale	E	NMFS	Not Reported	Species	Declining	Not Reported	9	11,802	11,802	13%
Rio Grande silvery minnow	E	FWS	2c	Species	Declining	0-25%	10	11,301	11,301	93%

*NMFS did not include a priority ranking in their report.

**Single status for multiple listed species.

***NMFS does not report recovery objective achieved.

****Rank does not take land expenditures into account.

Table 3: "Species" with the largest reported expenditures in FY 2003

Top 10 "species"	Status	Agency	Priority*	Taxonomic Unit	Population Status	Recovery Achieved**	$ Rank***	Expenditures ($K)	Expenditures ($K) including land	% Non-FWS/NMFS Including land expenditures
chinook salmon (9)****	E,T	NMFS	Not Reported	Species	Mixed	Not Reported	1	122,620	126,482	59%
steelhead (10)****	E,T	NMFS	Not Reported	Species	Mixed	Not Reported	2	101,449	105,895	61%
Steller sea-lion (2)****	E,T	NMFS	Not Reported	Species	Mixed	Not Reported	3	54,811	54,811	78%
coho salmon (3)****	T	NMFS	Not Reported	Species	Mixed	Not Reported	4	30,242	30,669	57%
bull trout	T	FWS	9c	Subspecies	Stable	0-25%	5	29,296	29,914	77%
sockeye salmon (2)****	E,T	NMFS	Not Reported	Species	Mixed	Not Reported	6	16,005	16,011	49%
chum salmon (2)****	T	NMFS	Not Reported	Species	Mixed	Not Reported	7	13,369	13,713	36%
right whale	E	NMFS	Not Reported	Species	Declining	Not Reported	8	11,802	11,802	13%
Rio Grande silvery minnow	E	FWS	2c	Species	Declining	0-25%	9	11,301	11,301	93%
red-cockaded woodpecker	E	FWS	8c	Species	Improving	0-25%	10	11,069	12,390	88%

*NMFS did not include a priority ranking in their report.

**NMFS does not report recovery objective achieved.

***Rank does not take land expenditures into account.

****all subspecies, ESUs, or DPSs combined.

Table 4: FWS Priority "1C" species expenditures and ranking FY 2003

Species	Status	Agency	Population Status	Recovery Achieved	$ Rank*	Expenditures ($K)	Expenditures ($K) including land	% Non-FWS/NMFS Including land expenditures
hawksbill sea turtle (Atlantic populations)**	E	FWS/NMFS	D	0-25%	56	3,309	3,403	44%
hawksbill sea turtle (U.S. Pacific populations)**	E	FWS/NMFS	D	0-25%	see above	see above	see above	see above
green sea turtle (U.S. East Pacific populations on the west coasts of the U.S., Central America and Mexico)***	E	FWS/NMFS	D	0-25%	70	2,048	2,048	6%
green sea turtle (U.S. Atlantic populations and individuals foraging in U.S. territorial waters)***	E	FWS/NMFS	I	0-25%	see above	see above	see above	see above
green sea turtle (U.S. Pacific populations in Hawaii, Guam, Northern Mariana Islands, American Samoa and other unincorporated U.S. Pacific islands/atolls)	T	FWS/NMFS	D	0-25%	58	3,259	12,253	12%
slender-horned spineflower	E	FWS	D	0-25%	274	99	99	100%
Comal Springs dryopid beetle	E	FWS	D	0-25%	726	11	11	9%
swamp pink	T	FWS	S	0-25%	603	20	20	85%
Kauai cave wolf spider or pe'e pe'e maka 'ole	E	FWS	S	0-25%	312	81	81	0%
Kauai cave amphipod	E	FWS	S	0-25%	307	83	83	0%
razorback sucker	E	FWS	U	0-25%	27	7,127	7,319	93%
Sacramento splittail	T	FWS	U	0-25%	181	236	236	91%

*Rank does not take land expenditures into account.

**FY 03 report does not differentiate between the 2 hawksbill populations.

***FY 03 report does not differentiate between different endangered populations of the green sea turtle.

Figure 7

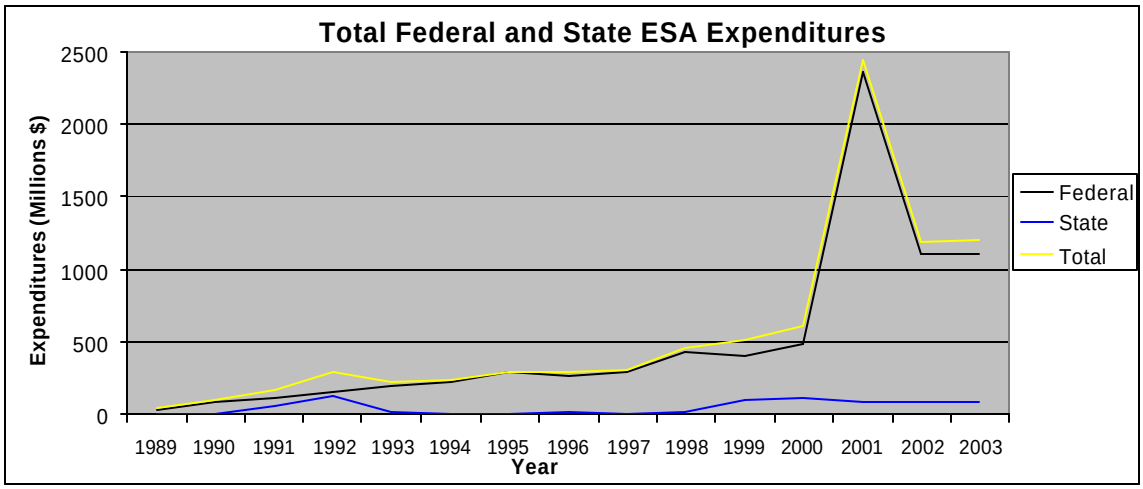
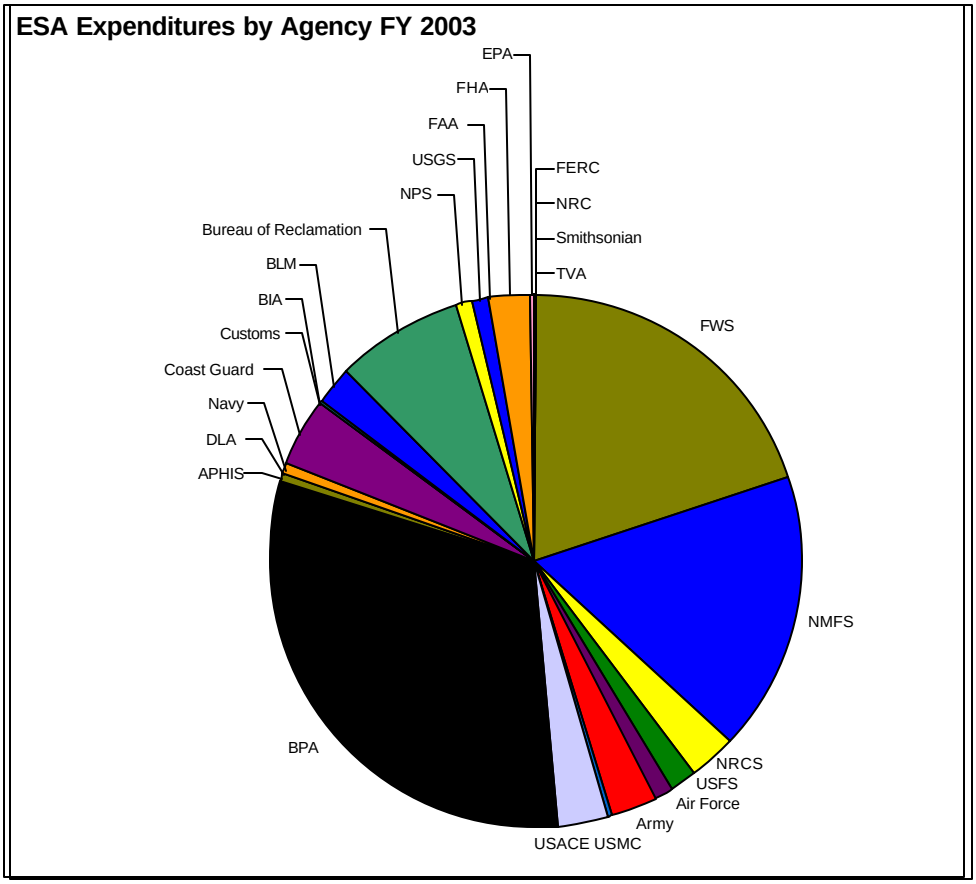


Table 5

ESA Expenditures by Agency

Agency FY 2003	total ($k)
APHIS	6,511
USFS	18,156
NRCS	31,728
NMFS	187,644
Air Force	11,279
Army	30,275
DLA	158
USMC	4,528
Navy	4,220
USACE	32,136
BPA	345,766
Coast Guard	47,732
Customs	300
BIA	2,478
BLM	25,972
Bureau of Reclamation	83,839
NPS	10,347
USGS	12,476
FAA	516
FHA	26,171
EPA	2,669
FERC	298
NRC	102
Smithsonian	471
TVA	32
FWS	221,589

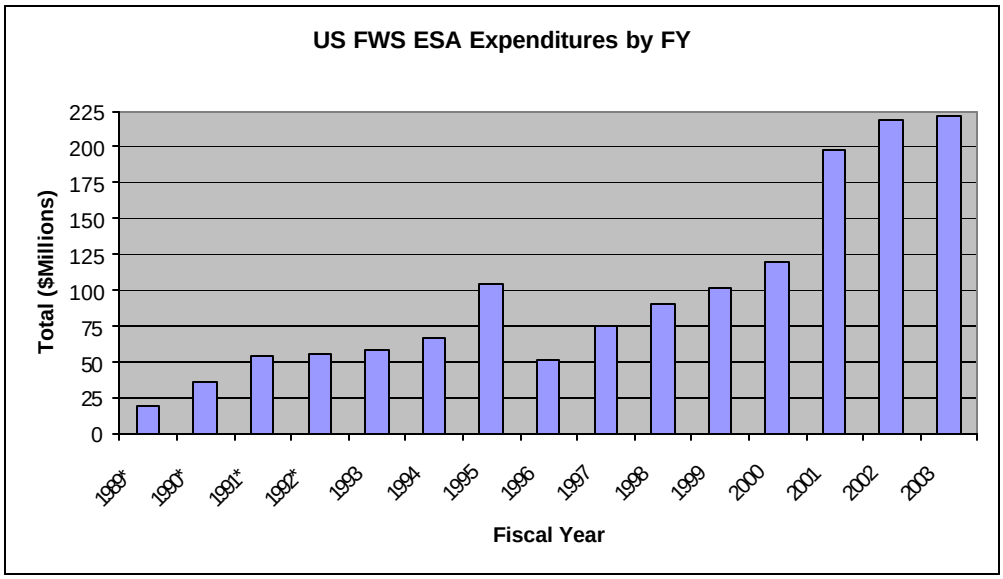
Figure 8



FWS and NMFS Reported Expenditures

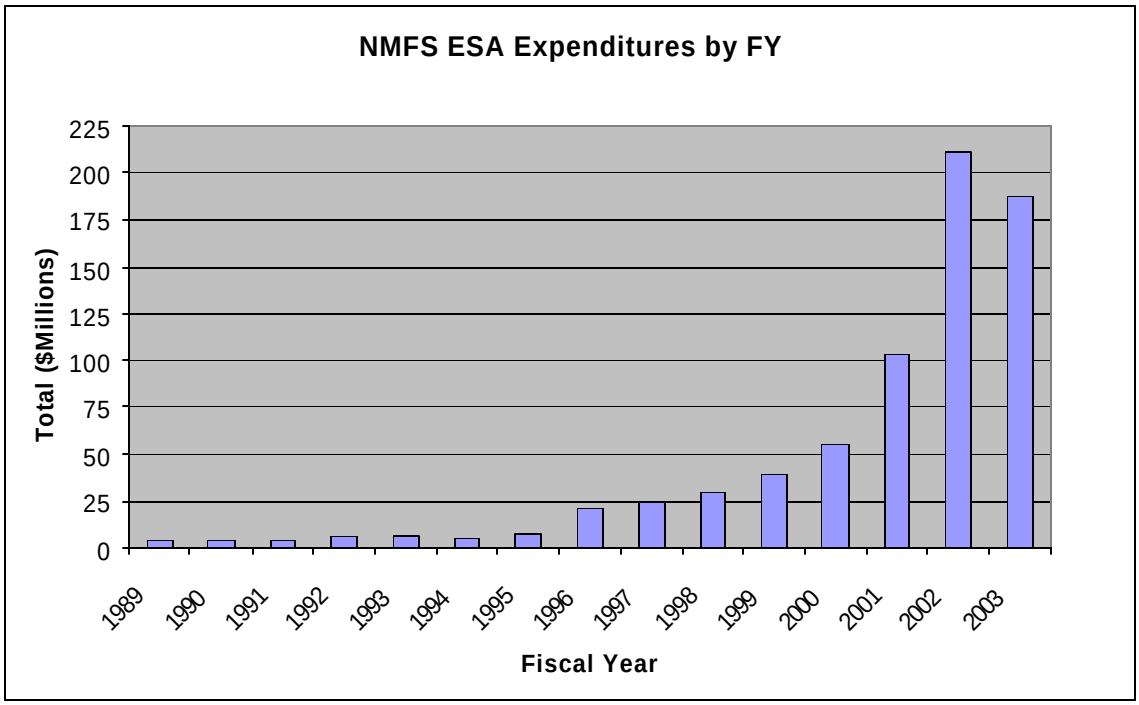
The FWS makes clear that inferring trends from data provided in the expenditure reports is difficult at best. As agencies have become accustom to the expenditure data collection process, reporting has likely improved. Further, the methodology in preparing the reports has changed over time. For example, in earlier years expenditures on land purchases were not segregated.

Figure 9



*After 1993, land acquisitions were compiled separately, but have been combined here.

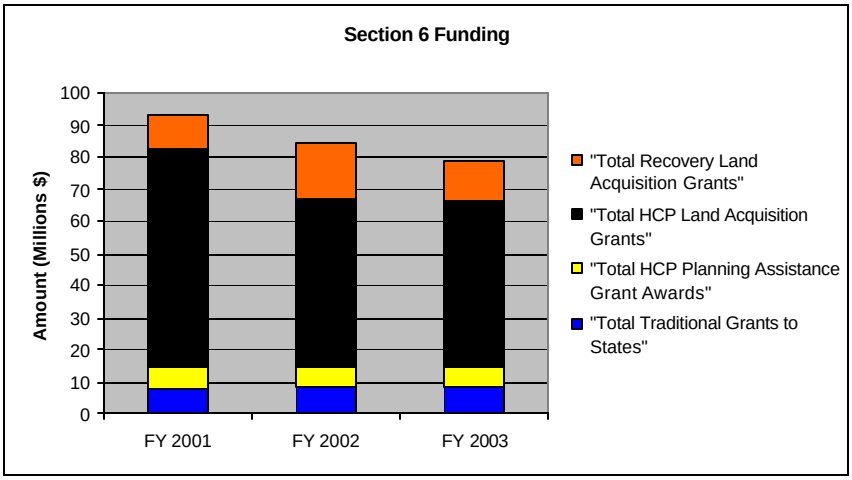
Figure 10



Section 6 Expenditures

There has been increasing discussion on the role of states under the ESA. Section 6 makes provision for cooperation with the states and a means of providing funding. Figure 11 portrays recent Section 6 expenditures and reveals a majority of Section 6 funds in recent years have been directed to land acquisition. (See Appendix 4 for FWS data on Section 6).

Figure 11

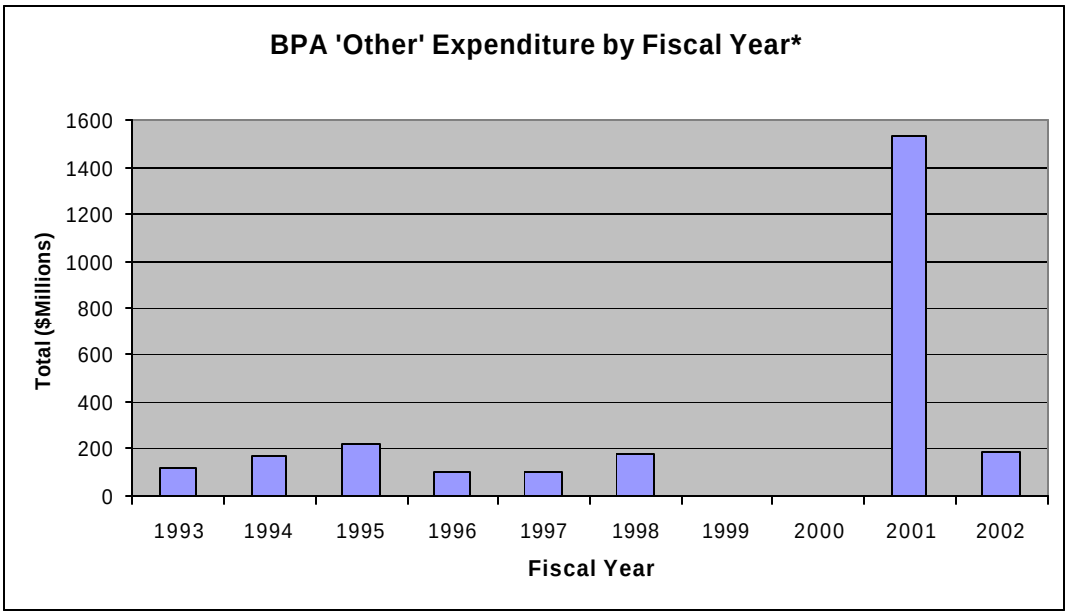


Expenditures by the Bonneville Power Administration and other Federal Agencies

The Bonneville Power Administration (BPA) reports particularly large expenses that are attributable to lost power generation revenue and additional purchases of power. The revenue is recorded as lost when water is spilled for the purpose of conserving listed species rather than to generate electricity. Additionally, the BPA reported large additional costs as it needed to purchase power when it was not generating enough to meet its obligations. These costs were particularly large **during the West Coast energy crisis of FY 01 when BPA reported species expenditures approaching $1,700,000,000**.[174]

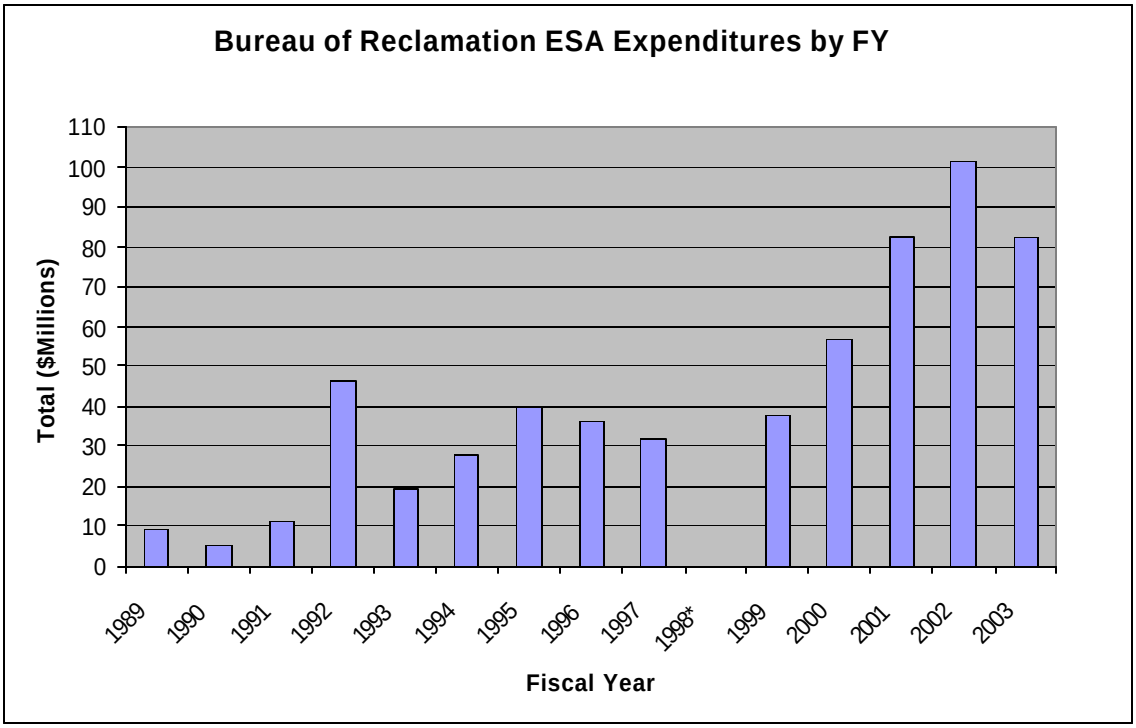
Chinook salmon

Figure 12



*Numbers correspond to 'other' BPA expenditures on ESA such as forgone power revenue, which represent the great majority of ESA expenditures by BPA. No other ESA expenditures were reported in 1999 or 2000. Total reported ESA expenditures in 2001 approached $1.7 billion.

Figure 13



*The 1998 report found on FWS website provides incomplete data from Bureau of Reclamation.

Figure 14

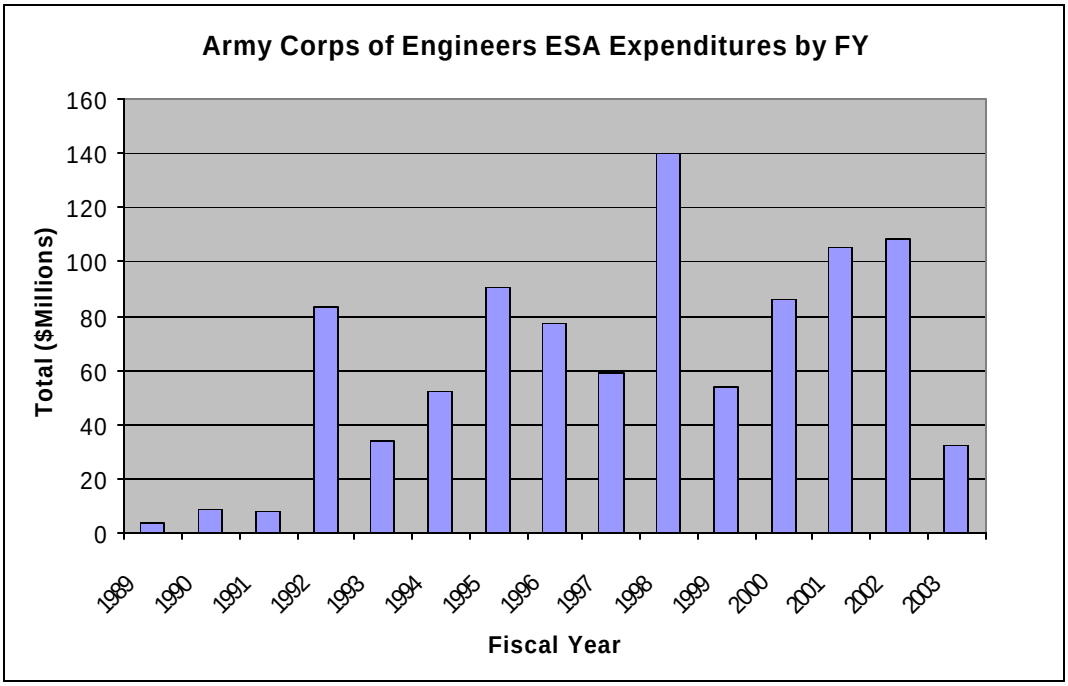
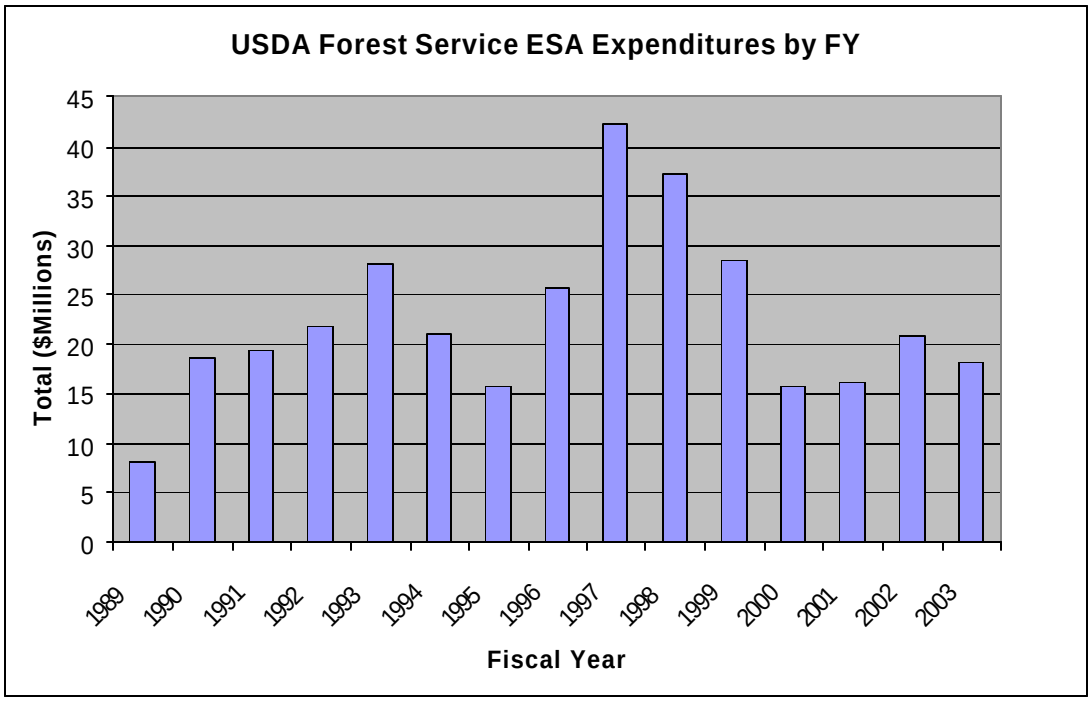


Figure 15



Expenditures by Taxon

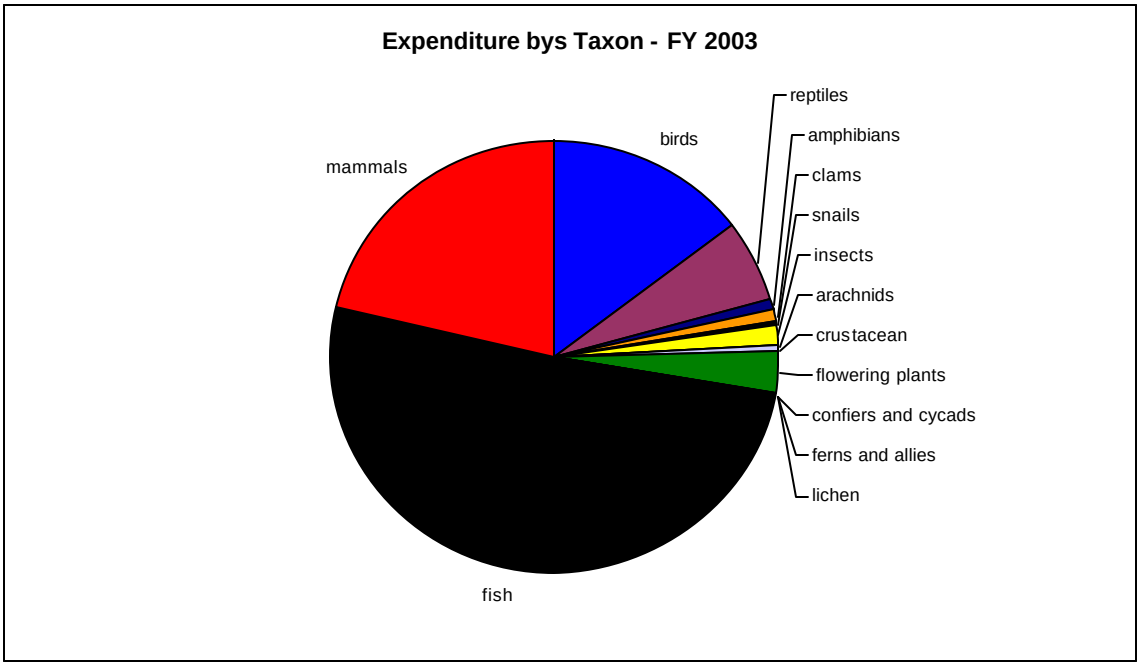
In the most recent expenditure reports, fish, as a taxon, received the greatest percentage of funds. The increase in expenditures on fish is in large part attributable to expenditures related to salmon and steelhead in the Pacific Northwest. Substantial expenditures on fish have been made by the BPA, NMFS, Bureau of Reclamation, the Corps of Engineers and the FWS.

Table 6

Expenditures by Taxon FY 2003

Taxon	non –land expenditures ($k)	land purchase ($k)	total ($k)	rank
mammals	133,849	34,850	168,699	2
birds	90,767	24,690	115,457	3
reptiles	38,168	10,613	48,781	4
amphibians	5,761	815	6,576	7
fish	382,364	15,414	397,778	1
clams	4,934	0	4,934	8
snails	2,086	2,192	4,278	9
insects	4,582	4,869	9,451	6
arachnids	563	0	563	11
crustacean	1,209	2,090	3,299	10
flowering plants	19,944	5,227	25,171	5
conifers and cycads	19	0	19	14
ferns and allies	562	0	562	12
lichen	22	0	22	13

Figure 16



Following 1979 Amendments to the ESA, the FWS adopted a system to prioritize consideration of species which are considered to be "higher life forms." This system ranked species in a descending order: mammals, birds, fish, reptiles, amphibians, vascular plants and invertebrates.[175] However, according to the FWS, it altered its policies so as to give no priority to higher or lower life forms in response to a conference report accompanying 1982 ESA amendments that "stated opposition" to a system that gave priority to "higher or lower life forms."[176]

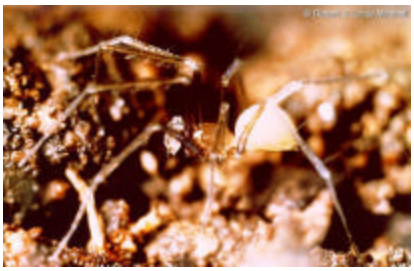
Within that statute itself various provisions appear to head in different directions on the issue of according preference to different taxons. The inclusion of a species on the endangered species list as a distinct population segment is limited to vertebrates, and while prohibitions regarding take of animals do not, take prohibitions apply differently to plants dependant upon property ownership. However, the ESA directs that the Secretary develop and implement recovery plans "without regard to taxonomic classification".[177]

Expenditure reports do generally indicate larger expenditures going to relatively 'higher taxa.' There are likely many factors that contribute to this. A significant portion of this is driven by conflict with fish. Some is clearly directed at what are often called 'flagship species' or 'charismatic megafauna' - essentially popular species. Some expenditures are earmarked for certain species by Congress. Recent expenditure reports do reveal expenditures directed to species that were likely not driven on the basis of popularity as examples in Table 7 show.[178]

Table 7

Expenditures on 'non charismatic' species

Species (by common name & number)	FY'03 ($k-rounded)
bats (9)	7,237
crows (2)	1,103
mice (9)	6,751
rabbits (3)	1,016
rats (9)	855
snails (23)	6,361
spiders (8)	328
squirrels (6)	1,109



Tooth Cave spider

Expenditures on Species Listed Based on Erroneous Data

Delistings, downlisting and information in previous Reports to Congress and recovery plans reveal that data used in listing a number of species has subsequently been determined to be erroneous. Populations of and the distribution of listed species have been underestimated. Threats to species have been overestimated and taxonomic classifications of some species have been subsequently revised. In part, this may be attributed to the current application of the ESA's standard of "best scientific and commercial data available." Currently, there is little or minimal requirement as to the qualitative or quantitative nature of information needed to make a determination under the ESA. The Data Quality Act appears to prescribe more rigorous standards for data used in a rule-making.

An inherent problem in making determinations as to the threat faced by species is that relevant data are often quite limited. A species may cover a large area, have a life history that makes the collection of information difficult (such as living in a cave or on the river bottom) or be difficult to distinguish from other species except to those with a particular expertise. Increasing use of genetic analysis can reveal that two species, once believed distinct from one another based on morphology or geographic differences, are genetically similar. Conversely, a species that was an amalgamation of similar animals or plants 'lumped' together may warrant further taxonomic divisions. While uncertainty and change are to be expected in biological science, they can have consequences under the regulatory framework of the ESA.

The FWS has recognized that listed species which do not actually merit listing, can divert scarce conservation dollars from truly endangered species. With regard to its species priority management system, the FWS states, "the first consideration of the system accounts for the management burden entailed by the species' being listed, which, if the current listing is no longer accurate, could divert resources from species more deserving of conservation efforts."[179] Table 8 reveals expenditures on species that were delisted or are proposed for delisting based upon erroneous data and a few examples of other listed species that may merit delisting on similar grounds. The costs indicated in this table reflect reported expenditures by federal and state agencies. However, these figures do not reflect all the expenditures that can result from erroneous listings.

For example, the figures for the Preble's meadow jumping mouse likely miss significant costs borne by state government and do not account for costs imposed upon lesser governmental entities and private parties. The critical habitat designation for this mouse reveals the types of costs that can occur. Over 31,000 acres of critical habitat was designated for the Preble's meadow jumping mouse.[180] FWS economic impact assessment for the critical habitat designation anticipated costs of $74 -$172 million. An addendum to this analysis increased the estimate to $79 – $183 million over ten years.[181]

Preble's meadow jumping mouse

Another indicator of costs related to the Preble's mouse are the effort going into habitat conservation plans. So that activities that would be considered to possibly otherwise violate the ESA can continue, a number of parties invested resources to prepare habitat conservation plans. Having an approved plan would allow the parties to receive protection from a charge of violating the ESA. To date some 16 Preble's meadow jumping mouse habitat conservation plans covering some 9,680 acres have been established ranging from just over a half acre to 6,143 acres.[182]

The Executive Director of Colorado's Department of Natural Resources has identified about $10 million in state funding directed at Preble's meadow jumping mouse research and conservation and over 25 million in grants directed to land preservation projects that have a total budget over $250 million. All of the projects were described as benefiting Preble's meadow jumping mouse habitat or potential habitat.[183]

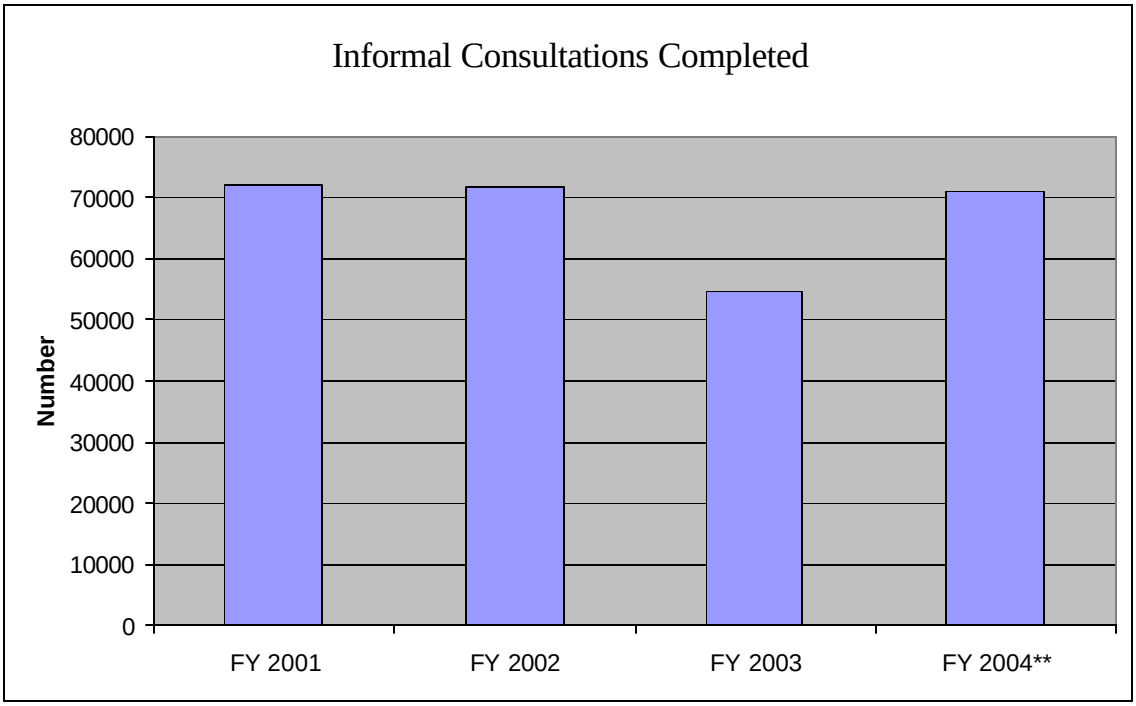
There can be other conservation costs associated with species that are listed on the basis of erroneous data (costs that are also applicable to species that are not data errors). With regard to the effects of the Preble's listing, researchers reporting in the journal Conservation Biology found that "[l]isting the Preble's under the ESA does not appear to have enhanced its survival prospects on private lands. In terms of hectares owned, for example, the efforts of landowners who reported they had sought to help Preble's (25 percent) were canceled out by the efforts of those who sought to harm it (26 percent). Moreover, the majority of respondents had not or would not allow a biological survey (56 percent), thus preventing collection of data for conserving the species."[184]

Table 8: Expenditures on species listed with erroneous data

SPECIES	DATE LISTED	DATE DELISTED	$ EXPENDITURES (ROUNDED THOUSANDS)																AGENCIES REPORTING EXPENDITURES
			1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	TOTAL	
DELISTED																			
barberry, Truckee	1979	2003	0	0	0	0	2	22	130	10	2	2	36	13	3	0	30	**250**	None
cactus, Lloyde's hedgehog	1979	1999	0	2	8	8	2	10	3	1	1	1	1					**37**	Air Force, Corps of Engineers
cactus, Spineless hedgehog	1979	1993	6	6	0	22	0											**34**	None
cuneate bidens	1984	1996	0	0	0	22	1	20	0	6								**49**	None
globeberry, Tumammoc	1986	1993	1,167	214	69	152	0											**1,602**	Bureau Reclamation, Corps of Engineers,
monarch, Tinian	1970	2004	0	0	7	2	6	82	105	15	31	30	25	32	25	25	16	**401**	Navy
shrew, dismal swamp southeastern	1986	2000	34	18	55	11	42	118	58	32	30	14	1	11				**424**	FHA, Soil Conservation Service, Corps of Engineers
trout, coastal cutthroat Umpqua R.	1996	2002	0	0	0	0	0	0	0	4,263	2,146	2,430	15	86	0	0		**8,940**	NRCS, EPA, APHIS, Corps of Engineers
wooly - star, Hoover's	1990	2003	0	15	15	65	88	112	136	477	99	45	56	21	10	8	11	**1,158**	BLM, USFS, Bureau of Reclamation, Corps of Engineers
PROPOSED DELISTING		**DATE PROPOSED**																	
frankenia, Johnston's	1984	2003	0	1	1	13	31	38	33	33	16	14	43	35	140	27	51	**476**	None
mouse, Preble's meadow jumping	1998	2005	0	0	0	0	0	0	0	0	0	1,174	1,059	2,370	762	1,051	873	**7,289**	USFS, NRCS, Air Force, Army, Corps of Engineers, USGS, FERC, BLM, FHA
sunflower, Eggert's	1997	2004	0	0	0	0	0	0	0	0	94	453	87	53	259	151	178	**1,275**	Corps of Engineers, NPS, FHA, FERC, Air force
LIKELY DATA ERRORS																			
cactus, Unita Basin hookless	1979	NA	9	14	17	31	38	10	13	20	12	18	10	32	35	43	31	**333**	BLM, NPS
cactus, Wright fishhook	1979	NA	14	5	1	12	10	14	16	26	21	14	12	21	36	41	76	**319**	BLM, Bureau of Reclamation, NPS
lizard, Island night	1977	NA	9	11	25	20	8	52	147	47	52	24	31	31	4	6	11	**478**	Navy, USGS

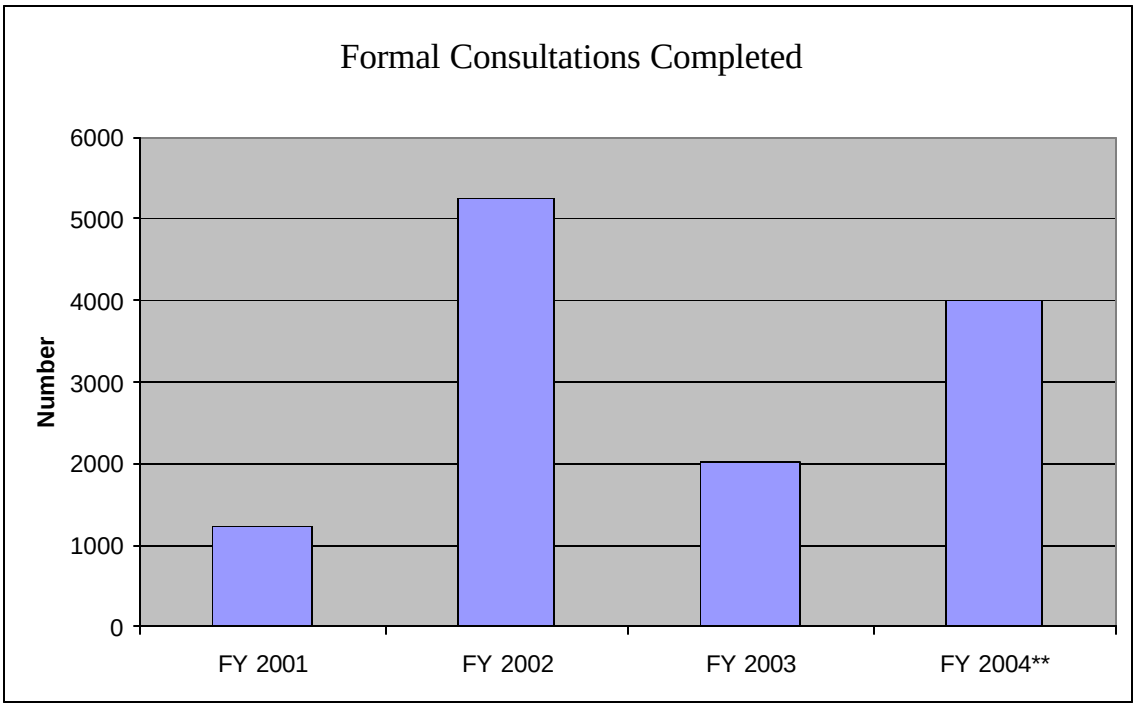
Another erroneously listed species, Eggert's sunflower, provides an additional example of such costs. In 2004 the FWS proposed delisting Eggert's sunflower after new information increased the population estimate from 34 known sites to 279 known sites. New life history information also showed that the species could thrive in disturbed areas and, consequently, actions such as timber harvesting and clearing could provide manmade habitat. In its delisting proposal, the FWS notes that it "evaluated potential impacts to this species from 248 federal actions…" and "conducted two formal consultations…"[185] The FWS also notes that it was sued by the Southern Appalachian Biodiversity Project for making the determination that designating critical habitat for Eggert's sunflower was not prudent. The expenditure of funds on species like Eggert's sunflower reduces funds available to address the already large workload generated under the ESA. Figures 17 and 18 (depicting the total formal and informal consultations for fiscal years 2001 – 2004) provide some sense of the workload to which these additional burdens are added. (See Appendix 5 for information on FWS ESA actions)

Figure 17



** FWS reported >71,000 informal consultations in FY 2004.

Figure 18



FWS reported > 4,000 formal consultations completed in FY2004

The sheer volume of material processed under the ESA Section 7 is an indicator of the amount of time federal biologists and resource professionals allocate to endangered species activities other than recovery. This is likely true of biologists and resource managers outside of FWS and NMFS in other Federal and state agencies as well as in the private sector.

For example, US Forest Service and Bureau of Land Management officials report that there is, "…a complex bureaucratic maze of process and procedures, which field biologists and managers must attempt to negotiate on a daily basis in order to implement on-the-ground projects."[186] Making the comments on well "intention[ed]" regulation, policies and directives, the agencies provide examples of what appear to be waste of agency resources and the non-navigable nature of the current endangered species program including:

- a roughly two year consultation so that the Lower Elwha Tribe could obtain "a cedar tree for a canoe for ceremonial purposes;"

- preparation of a 45 page biological assessment so that possibly several leaky toilets could be replaced at campgrounds and;

- the inability to obtain "a letter of concurrence" finding a wedding at a camping site was not likely to affect endangered species. The area requested for the wedding was the "same area as the (unpermitted) 2001 Rainbow Gathering (20,000 people), which

included many unauthorized activities (camping, latrines, kitchens) within the riparian area..."

Limits of Expenditure Report Data

Beginning with FY 01 the FWS has provided more comprehensive view of endangered species expenditures has been presented. Many expenditures such as some of those reported by Bonneville Power Administration were reflected in the totals. For the first time ESA expenditures that could not be attributed to a specific species were included in the 2001 report as "other ESA" expenditures. Although the ESA only requires reporting those expenditures "reasonably attributable" to a specific species, this commendable FWS initiative provides a more complete picture of endangered species expenditures.

While the 2001 and 2002 reports provide a more complete view of endangered species expenditures, they fall far short of capturing all expenditures on endangered species. **The current reporting still does not present a complete picture of federal or state ESA expenditures.**

For example, the Corps of Engineers recently testified that, "[b]ased on recent expenditure reports, the Corps has spent from $32 to over $108 million per year since 1996 on over 250 federally listed threatened species and endangered species. … Reported expenditures are suspected to be a substantial underestimate of the true cost of ESA compliance. A recent investigation for sea turtles, for example, revealed that reported costs were only about half the actual costs incurred by Districts. We are now developing an improved cost accounting system."[187]

Perhaps similarly, while the US Forest Service reported some $18 million in FY 03 for species specific expenditures, it reported no "other ESA" expenditures. Given this agency's mission, it seems unlikely that there were not significant expenditures that would fall in the "other ESA" category. Endangered species conservation plays a powerful role in federal land management and may have a large effect on revenues derived from federal lands. For example, species conservation efforts may have led to lost royalties and reduced timber harvest revenues while increasing management costs. There is no indication that the USFS reported expenditures reflect lost revenues and the same may be said of the Bureau of Land Management expenditure data. Another example is that the Department of Justice (DOJ) reports no expenditures with regard to the ESA litigation expenditures. Similarly there were no reported costs associated with payments from the Judgment Fund for cases in which the plaintiffs' received attorney's fees resulting from ESA litigation.

State expenditures may also be significantly under reported. Currently, states report expenditures to an association which then reports them to the FWS. In the FWS report the expenditures by the states on each species have been aggregated. From the FWS report it cannot be determined how much any particular state reported or exactly what agencies within any given state have reported expenditures. Many state departments of transportation, for example, likely have sizable endangered species expenditures that

would be missed if a state simply reported expenditures by its department of natural resources or its fish and game agency.

More importantly**, the expenditure reports, consistent with the current provisions of the ESA, do not address expenditures by governmental units below the level of states, and the reports do not reflect private expenditures or costs.** These costs are likely a significant percent of the total expenditures the public makes on endangered species and range from funds expended by private preservation organizations for the conservation of habitat to costs absorbed by a county or business to achieve compliance.

Costs borne by the city of Colton, California related to the Delhi sands flower-loving fly are an example of economic impacts on governmental units below the state level. Colton reports over a dozen different conflicts with the fly including some $4 million for redesigning activities at the San Bernardino County Hospital, an over $80 million decrease in assessed valuation affecting tax roll revenues, an increase of $1.5 million in street maintenance costs, increased costs for a storm drainage project, delay of road realignment and loss of grants for an interchange project.[188]

Delhi sands flower-loving fly

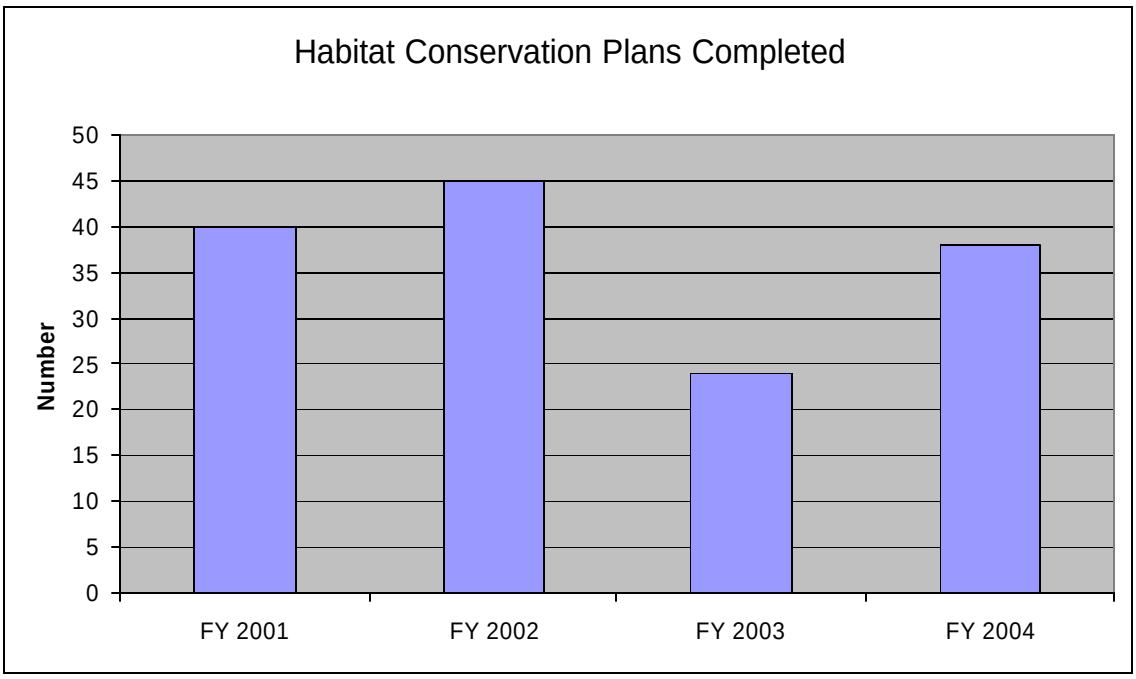
Additional indications of the kinds of costs born by private and other governmental entities on endangered species is revealed in the more recent economic analyses conducted in association with promulgation of critical habitat and in the funding of habitat conservation plans. For example, the FWS has estimated the cost of designating 95,655 acres of critical habitat for the Arroyo toad (*Bufo californicus*) at $1 billion over 10 years.[189] According to the FWS, "[t]he $1 billion estimate includes impacts of arroyo toad conservation activities on lands proposed for designation. The real estate industry is expected to incur about $937 million in costs. Some of the estimated costs already are occurring due to the listing of the arroyo toad and protective measures in place as a result of the listing. These costs include lands set aside for toad conservation to compensate for loss of toad habitat, and measures needed to protect the toad while construction is ongoing. Other projected costs are associated with military activities, changes in water supply, grazing and mining activities, and construction projects." According to the FWS, "[a]bout 54 percent of the proposed critical habitat is privately-owned; 39 percent is federally-owned; 6 percent is under state ownership, and 2 percent is owned by tribal governments."

In another case, the city of Phoenix estimates that replacing the water it loses from the designation of critical habitat for the southwest willow flycatcher, a bird, is a minimum of $147 million.[190]

The FWS estimated the costs identified in one multi-species recovery plan to be "about $1.3 billion over the next 20 years, or about $115 million annually."[191] The plan covers some 15 species that are associated with "vernal pools" in California and Oregon and the most prominent species associated with this plan are fresh water crustaceans commonly called 'fairy shrimp.'

Private parties in just the unincorporated areas of San Diego County have paid some $485 million to be covered by a habitat conservation plan that covers multiple species.[192] Figure 19 reveals the number of HCP's completed between 2001 and 2004.

Figure 19



VIII. Critical Habitat

Under Section 4 of the ESA critical habitat is designated. In practice, the act of designating or not designating critical habitat has been a subject of litigation and controversy. To date critical habitat has been designated for some 478 species. Some designations are for multiple species and in other instances, designated critical habitat for one species may overlap designated critical habitat for another.

When critical habitat is designated an economic impact analysis is to be produced. In practice, like critical habitat designation, production of economic impact analyses has been problematic. Staff found it difficult to obtain economic analysis documents that should be readily available to the public online.

Some economic analyses have resulted in determinations such as "less than $100 million."[193] Such assessments may have been based upon the notion that any economic impact related to the species, resulted primarily from the inclusion of the species on the endangered and threatened species list, and thus any additional economic impact resulting from the subsequent designation of critical habitat was not significant. This approach was rejected by the courts. Because of court rulings and other reasons, the methodology used

by the FWS in conducting these analyses has changed over time, frustrating a cumulative assessment of economic impact as identified in these analyses. The changes in the approaches to critical habitat economic impact assessments are complicated as is the history of and factors bearing upon agency use of critical habitat designations.

ESA prohibitions in Section 7 and Section 9 have a powerful effect on actions that may or do have an impact on endangered and threatened species and their habitat. Under Section 7, federal actions are prohibited from jeopardizing (possibly causing the extinction of) a species. Section 7 of the ESA also prohibits Federal actions from resulting in "adverse modification" of habitat that has been designated as being "critical" for an endangered or a threatened species. The "take" of listed species which encompasses the elements of "harm, harass, shoot, wound, kill, trap, capture or collect" or attempting to engage in these activities is enforced through the Section 9 of the ESA. By statute, the taking of endangered species is prohibited and the take of threatened species may be prohibited by the promulgation of regulation. Combinations of regulations and court rulings have fundamentally altered the structure of the ESA in which the mechanism of critical habitat was designed to function.

First, the FWS promulgated a regulation that essentially inverted the mechanism whereby take of threatened species may be prohibited to one in which take of threatened species may be permitted.[194] The ESA itself does not prohibit any activity that may take a threatened species unless a regulation prohibiting the action has been promulgated. Rather than promulgating regulations that prohibited specific actions from taking selected threatened species, the FWS promulgated a regulation that applied the take prohibition in general to all threatened species and has subsequently, on occasion, promulgated regulations that exempt specific actions with regard to specific species. In essence, for regulatory purposes, the distinction between endangered and threatened species was eliminated. All takes of threatened species have been prohibited rather than only those specified by specific regulation.

Second, the term take including the elements "harm" and "harass" has been interpreted broadly. Unlike the other elements of take (kill, hunt, wound, shoot, capture, trap or collect) that indicate a close and direct relationship between the person committing a take and the species that is being taken with the method of take linking the two, harm has been interpreted to include actions in which the injury done to the species can be part of a chain of events, such as might occur by habitat modification, that may even be somewhat subjective. For example, some type of construction could cause a species to abandon a foraging or nesting area for poorer quality foraging habitat resulting in the reduced vigor and eventual death of the species. In response to legal challenges the Supreme Court determined that there are limits to how expansively habitat modification may be interpreted as "take" but a rather broad description of harm in regulation has been upheld.[195]

However, unlike 'shoot' or 'trap', proximate taking of endangered species by harming them may involve a relatively subjective assessment by agency biologists. Consequently, threatened species are essentially the same as endangered species unless specific regulations are otherwise promulgated and actions that modify habitat, may be prohibited if the agency determines that the actions will proximately result in a 'take' of a

species. This is true whether the habitat has been designated as critical or not. The agencies' consultation manual asserts that in some cases it may not be possible to find the body of a species that has been taken and that a dead species is not necessary to measure a 'take.'[196]

In combination, the above factors have created a situation whereby the additional regulatory authority accrued with designation of critical habitat may not be as significant as it might otherwise have been. A conflict between individuals wishing to develop property in Texas and endangered cave invertebrates illustrates this use of the ESA's take provision with regard to activities that affect habitat.[197]

In 1983 Dr. Fred Purcell and his brother Judge Gary Purcell purchased and subsequently invested millions in developing a 216 acre property. FWS subsequently listed several cave dwelling invertebrate species as endangered including the Bee Creek Cave harvestman, the Bone Cave harvestman, the Tooth Cave pseudoscorpion, the Tooth Cave spider, the Tooth Cave ground beetle, and the Kretschmarr Cave mold beetle. These species occur in several caves and sinkholes on the property of the Purcell's and other nearby properties.

Kretschmarr Cave mold beetle

So that development might proceed, the Purcells deeded several caves and over 10 acres of buffer zones surrounding the caves to a non-profit foundation dedicated to the research of environmental issues. Ultimately, the Purcells' dedication of the preserves was unsatisfactory to the FWS and development was thwarted for over a decade. At one point, the FWS threatened Dr. Purcell with criminal prosecution for violation of the ESA's 'take' prohibition. The action alleged to constitute a criminal take included clearing brush. The Purcells sought an incidental take permit, meeting with FWS officials numerous times with development proposals. In a 1998 meeting a FWS official produced a map indicating that development was prohibited on all but a few, isolated tracts of land. Of the 216 acres in Tracts A-E, the map indicated that development was prohibited on Tracts A, B, C, F and G and on 40 acres of the 74 acre C tract and 37.3 acres of the 47 acre D Tract leaving the E tract which according to the plaintiffs consists of steep canyons and which is inaccessible by road. Conflict with the FWS led to the Purcells initiating several legal challenges through their partnership, GDF Realty, Ltd, and eventually, to GDF Realty, Ltd. filing for bankruptcy.

No critical habitat has been designated for any of these cave dwelling invertebrates and brush clearing is not done inside caves. The FWS was interpreting the take prohibition to allow them to exert regulatory authority over the Purcells' property because the habitat modification might take these listed species.

The Purcells' case reveals how the application of take can reduce the incremental increase in regulatory authority stemming from the designation of critical habitat. In addition to having historically provided limited increases in regulatory authority in many

instances, the process of designating critical habitat can be politically charged, resource intensive and requires that agencies complete an economic impact assessment to document the resulting regulatory burden. These aspects of critical habitat designation are not likely viewed as benefiting the implementing agencies.

Given this reality, the disparaging FWS statements with regard to the value of ESA critical habitat mechanism are not surprising. The FWS has opined:

> In 30 years of implementing the ESA, the Service has found that the designation of statutory critical habitat provides little additional protection to most listed species, while consuming significant amounts of conservation resources. The Service's present system for designating critical habitat is driven by litigation rather than biology, limits our ability to fully evaluate the science involved, consumes enormous agency resources, and imposes huge social and economic costs. The consequence of the critical habitat litigation activity is that limited listing funds are used to defend active lawsuits and to comply with the growing number of adverse court orders. As a result, the Service's own proposals to undertake conservation actions based on biological priorities are significantly delayed.[198]

A recent court ruling (Gifford Pinchot Task Force v. USFWS)[199] has, however, presented a much lower threshold for a determination with regard to the destruction or adverse modification of critical habitat and altered this dynamic. The Court's reasoning was that Section 7of the ESA requires federal agencies to avoid the destruction or adverse modification of critical habitat. Then the court looked to regulations. Existing regulations define "destruction or adverse modification" to be '"…an alteration that appreciably diminishes the value of critical habitat for survival and recovery…" Agency regulations also define jeopardy as an action that "… reduces the likelihood of both the survival and recovery of the species." Relying on these definitions, the court found that determinations regarding adverse modification of critical habitat had to consider not only the species' survival but also the effects on recovery of the species. In the court's view, the ESA sets the threshold for initiating section 7 consultation at the point in which a federal action would reduce the likelihood of recovery which is lower than the jeopardy standard which would be triggered only if the federal action would rise to the level of possibly leading to extinction of the species.

Regardless of the FWS opinion before or after the Pinchot decision, critical habitat must be designated under the ESA and economic analyses are to accompany such designations. To date, critical habitat has been designated for some 478 species. The costs involved in just printing proposed and final rules for critical habitat can be quite substantial. According to the FWS, FY 05 costs for printing in the Federal Register were $465 per page of text and $495 for each full page map.[200] The California tiger salamander critical habitat designation is some 80 pages including some 30 full page maps.[201] Using FY05 costs for printing puts just the printing cost of this critical habitat rule at just over $38,000.[202]

Economic impact assessments conducted with critical habitat designations vary significantly as some examples for California reveal but indicate that costs imposed on

other governmental agencies and private parties are large. The economic impact of the designations may be reduced by excluding areas if the Secretary finds that the benefits of the exclusion outweigh benefits of inclusion and provided that the Secretary does not find that the "failure to designate such area as critical habitat will result in the extinction of the species…" For example, the final critical habitat designation for the Riverside fairy shrimp was dramatically reduced as an economic impact assessment had found that "the cost of conserving the shrimp over the next 20 years could exceed $500 million."[203]

- California Coastal Gnatcatcher, $915 million over 20 years;[204]
- California tiger salamander, lower bound scenario of $105 million and an upper bound scenario of $411 million;[205]
- Inyo California towhee, "less than $100 million";[206]
- San Bernadino Merriam's kangaroo rat, between $4.4 million and $28.2 million;[207]
- Quino checkerspot butterfly, between $3.5 million and $14.1 million;[208]
- Bay checkerspot butterfly, $6.5 million;[209]
- San Bernadino Mountains bladderpod, between $38,000 and $116,000;[210]
- Western snowy plover, "none expected;"[211]
- Zayante Band-winged grasshopper, "minimal."[212]

Roughly 10,940,398 acres, over 10 percent of California, has been designated as critical habitat just for FWS species. According to the FWS this includes 60 percent federal, 30 percent private, 8 percent state and 2 percent tribal and other lands.[213] NMFS critical habitat designations increase the total acreage designated in California substantially. (See Appendix 6 for maps depicting FWS critical habitat designations in California).

Tables 9, 10, and 11 show FWS species with designated critical habitat in California, and the species for which and the amount of habitat that has been designated as critical in Florida and Texas respectively.

Table 9 – California FWS Species with Critical Habitat

Common Name	Scientific Name	Year Listed	Status
Amargosa nitrophila	*Nitrophila mohavensis*	1985	Endangered
Amargosa vole	*Microtus californicus scirpensis*	1984	Endangered
Antioch Dunes evening primrose	*Oenothera deltoides ssp. howellii*	1978	Endangered
Baker's larkspur	*Delphinium bakeri*	2000	Endangered
Bay checkerspot butterfly	*Euphydryas editha bayensis*	1987	Threatened
Butte County meadowfoam	*Limnathes floccosa ssp. californica*	1992	Endangered
California condor	*Gymnogyps californianus*	1967	Endangered
California red-legged frog	*Rana aurora draytonii*	1996	Threatened
California tiger salamander (Santa Barbara County Pop.)	*Ambystoma californiense*	2004	Threatened
Camatta Canyon amole	*Chlorogalum purpureum var. reductum*	2000	Threatened
Coachella Valley fringe-toed lizard	*Uma inornata*	1980	Threatened
Coastal California gnatcatcher	*Polioptila californica californica*	1993	Threatened
Conservancy fairy shrimp	*Branchinecta conservatio*	1994	Endangered
Contra Costa goldfields	*Lasthenia conjugens*	1997	Endangered
Contra Costa wallflower	*Erysimum capitatum var. angustatum*	1978	Endangered
Cushenbury buckwheat	*Eriogonum ovalifolium var. vineum*	1994	Endangered
Cushenbury milk-vetch	*Astragalus albens*	1994	Endangered
Cushenbury oxytheca	*Oxytheca parishii var. goodmaniana*	1994	Endangered
Delta green ground beetle	*Elaphrus viridis*	1980	Threatened
Delta smelt	*Hypomesus transpacificus*	1993	Threatened
Desert pupfish	*Cyprinodon macularius*	1986	Endangered
Desert tortoise	*Gopherus agassizii*	1980	Threatened
Fleshy owl clover	*Castilleja campestris ssp. succulenta*	1997	Threatened
Fresno kangaroo rat	*Dipodomys nitratoides exilis*	1985	Endangered
Gaviota Tarplant	*Hemizonia increscens ssp. villosa*	2000	Endangered
Green's tuctoria	*Tuctoria greenei*	1997	Endangered
Hairy orcutt grass	*Orcuttia pilosa*	1997	Endangered
Inyo California towhee	*Pipilo crissalis eremophilus*	1987	Threatened
Keck's checkermallow	*Sidalcea keckii*	2000	Endangered
Kneeland Prairie pennycress	*Thlaspi californicum*	2000	Endangered
La Graciosa thistle	*Cirsium loncholepis*	2000	Endangered
Large flowered fiddleneck	*Amsinckia grandiflora*	1985	Endangered
Least Bell's vireo	*Vireo bellii pusillus*	1986	Endangered
Little Kern golden trout	*Oncorhynchus aguabonita whitei*	1978	Threatened
Lompoc yerba santa	*Eriodictyon capitatum*	2000	Endangered

Common Name	Scientific Name	Year Listed	Status
Longhorn fairy shrimp	*Branchinecta longiantenna*	1994	Endangered
Marbled murrelet	*Brachyramphus marmoratus marmoratus*	1992	Threatened
Monterey spineflower	*Chorizanthe pungens var. pungens*	1994	Threatened
Morro Bay kangaroo rat	*Dipodomys heermanni morroensis*	1970	Endangered
Morro shoulderband snail	*Helminthoglypta walkeriana*	1994	Endangered
Northern spotted owl	*Strix occidentalis caurina*	1990	Threatened
Otay tarplant	*Deinandra (=Hemizonia) conjugens*	1998	Threatened
Owens tui chub	*Gila bicolor snyderi*	1985	Endangered
Palos Verdes blue butterfly	*Glaucopsyche lygdamus palosverdesensis*	1980	Endangered
Parish's daisy	*Erigeron parishii*	1994	Threatened
Peirson's milk-vetch	*Astragalus magdalenae var. peirsonii*	1998	Threatened
Penninsular bighorn sheep	*Ovis canadensis*	1998	Endangered
Purple Amole	*Chlorogalum purpureum var. purpureum*	2000	Threatened
Quino checkerspot butterfly	*Euphydryas editha quino*	1997	Endangered
Robust spineflower	*Chorizanthe robusta (incl. vars. robusta and hartwegii)*	1994	Endangered
Sacramento orcutt grass	*Orcuttia viscida*	1993	Endangered
San Bernardino kangaroo rat	*Dipodomys merriami parvus*	1998	Endangered
San Bernardino Mountains bladderpod	*Lesquerella kingii ssp. bernardina*	1994	Endangered
San Diego fairy shrimp	*Branchinecta sandiegonensis*	1997	Endangered
San Joaquin orcutt grass	*Orcuttia inaequalis*	1997	Threatened
Santa Ana sucker	*Catostomus santaanae*	2000	Threatened
Santa Cruz tarplant	*Holocarpha macradenia*	2000	Threatened
Scotts Valley polygonum	*Polygonum hickmanii*	2003	Endangered
Scotts Valley spineflower	*Chorizanthe robusta (incl. vars. robusta and hartwegii)*	1994	Endangered
Slender orcutt grass	*Orcuttia tenuis*	1997	Threatened
Solano grass	*Tuctoria mucronata*	1978	Endangered
Tidewater goby	*Eucyclogobius newberryi*	1994	Endangered
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	1980	Threatened
Ventura Marsh milk-vetch	*Astragalus pycnostachyus var. lanosissimus*	2001	Endangered
Vernal pool fairy shrimp	*Branchinecta lynchi*	1994	Threatened
Vernal pool tadpole shrimp	*Lepidurus packardi*	1994	Endangered
Western snowy plover	*Charadrius alexandrinus nivosus*	1993	Threatened
Yellow larkspur	*Delphinium luteum*	2000	Endangered
Zayante Band-winged grasshopper	*Trimerotropis infantilis*	1997	Endangered

Table 10- Florida FWS Species with Critical Habitat

Common Name	Scientific Name	Year Listed	Status	Acreage
American Crocodile	Crocodylus acutus	1975	Endangered	780,000
Cape Sable seaside sparrow	Ammodramus maritimus mirabilis	1967	Endangered	197,000
Choctawhatchee beach mouse	Peromyscus polionotus allophrys	1985	Endangered	750
Everglade snail kite	Rostrhamus sociabilis plumbeus	1967	Endangered	841,000
Gulf sturgeon	Acipenser oxyrinchus desotoi	1997	Threatened	611,000 plus 650 river miles
Perdido Key beach mouse	Peromyscus polionotus trissyllepsis	1985	Endangered	1,000
Piping plover	Charadrius melodus	1985	Endangered	44,000
Rice rat	Oryzomys palustris natator	1991	Endangered	10,000
West indian manatee	Trichechus manatus	1967	Endangered	1,200,000
			Total Acres	3,684,750 plus 650 river miles

Table 11 - Texas FWS Species with Critical Habitat

Common Name	Scientific Name	Year Listed	Status	Acreage
Braken Bat Cave Meshweaver	Cicurina venii	2000	Endangered	85
Cokendolpher Cave Harvestman	Texella cokendolpheri	2000	Endangered	57
Concho water snake	Nerodia paucimaculata	1986	Threatened	20,229
Fountain darter	Etheostoma fonticola	1970	Endangered	46
Ground bettle [unamed]	Rhadine exilis	2000	Endangered	687
Ground bettle [unamed]	Rhadine infernalis	2000	Endangered	724
Helotes mold beetle	Batrisodes venyivi	2000	Endangered	119
Houston toad	Bufo houstonensis	1970	Endangered	84,475
Leon springs pupfish	Cyprinodon bovinus	1980	Endangered	13
Madla's Cave Meshweaver	Cicurina madla	2000	Endangered	282
Pipping plover	Charadrius melodus	1985	Endangered	275,187
Robber Baron Cave Meshweaver	Cicurina baronia	2000	Endangered	57
San Marcos Gambusia	Gambusia georgei	1980	Endangered	20
San Marcos salamander	Eurycea nana	1980	Threatened	21
Texas wild-rice	Zizania texana	1978	Endangered	61
Whooping Crane	Grus americana	1967	Endangered	197,412
Zapata Bladderpod	Lesquerella thamnophila	1999	Endangered	5,346
			Total Acres	584,821

IX. Findings

- A small number of species have been delisted or downlisted as a result of successful ESA recovery efforts;

- Available data indicate that the vast majority of listed species (77 percent) are in the lowest quarentile (0-25 percent) of 'recovery achieved';

- Of species included in the most recent FWS report 39 percent are "uncertain", 30 percent are "declining', 21 percent are "stable" 6 percent are "improving", 3 percent are "possibly extinct" and 1 percent are believed only to exist in captivity;

- About 30 or more currently listed species are assessed as "possibly extinct";

- Given the relative rate of listing and delistings, the potential pool for future listings, the costs associated with the process along with the workload placed upon the implementing agencies and the economic impacts, the current program does not appear sustainable;

- Despite being enforced for more than three decades, there is a consistent lack of reliable qualitative information about the condition of endangered and threatened species regulated under the ESA;

- A higher "recovery achieved" ranking for a species does not necessarily indicate actual improvement in the condition of the species;

- Because much of the available data for the program is subjective and can reflect factors other than what they would seem to reflect, there is insufficient information upon which to draw general conclusions, other than on an anecdotal basis, regarding the ESA's effectiveness in conserving or 'saving' listed species;

- Data may indicate that species are "improving" or "stable" when there has been no actual change in the condition of the species (i.e. there may have been no actual increase in the species' numbers, populations or distribution) and the assessment of these statuses can reflect corrections to earlier erroneous data;

- Species listed on the basis of erroneous data consume funds that could otherwise be directed to species that are actually endangered or threatened;.

- The assessment of recovery priorities for listed species appears heavily skewed and is likely inaccurate in many cases;

- Although not clearly contemplated in the ESA, it may not be possible to recover some listed species to the point at which protections under the ESA are no longer necessary;

- Although improved in recent years, current expenditure reporting misses federal government expenditures on listed species;

- The completeness of state listed species expenditure reporting cannot be assessed from current reports and may underestimate state expenditures;

- Current reporting does not capture expenditures of governmental units below the state level or by private parties;

- By weighted average, biological species do not receive greater funding over subspecies or lesser taxonomic units;

- The distinction between endangered and threatened species has been blurred;

- A combination of factors has altered the framework under which critical habitat was designed to function.

X. Recommendations

- A meaningful distinction between threatened and endangered species should be established.

- More rigorous criteria for the determination of endangered and threatened species should be established. Consistent with the Data Quality Act the implementing agencies should require more rigorous criteria in listing decisions.

- As threat to species should be contemplated in the determination between "threatened" and "endangered" status, altering the priority system to first consider taxonomic uniqueness could, in general, increase the program's focus on relatively more unique animals and plants.

- A number of species were likely listed on the basis of erroneous data and should, as well as some that are 'possibly extinct', be delisted. A more simplified mechanism for delisting species may improve program efficiencies. The appropriateness of current designations should be thoroughly assessed including endangered status and recovery priority.

- Mechanisms that reduce the resource consuming nature of Section 4 determinations should be considered to make the program more effective and allow an increased focus on recovery.

- The data for the Report to Congress and the Species by Species Expenditure Reports should be made available in an online searchable electronic format. This would increase the authorizing and appropriating committees' abilities to review the program and increase public accessibility to information about the program. The data should be searchable by the individual species (perhaps in association

with the FWS TESS database (Threatened and Endangered Species Database System)). The data should also be searchable by different fields (i.e. searches by agency or state making expenditures, species status, species' range states etc.).

- Specific requirements as to the type and amount of data to be included in the Report to Congress could increase the usefulness of the reports for assessing and managing the program. The report could include population and distribution data including trend data, an assessment of the data's reliability and a description of the objective and measurable criteria established pursuant to the Act's Sec.4(f)(1)(B)(ii).

- Economic impact assessments conducted in association with critical habitat designations should be easier to locate online. Electronic copies of these documents should be consistently available on the FWS TESS database.

- Requiring states that receive Section 6 of the ESA funding to report state expenditures (including those expenditures from other than natural resources departments or fish and wildlife agencies specifically charged with endangered species management) may provide a more complete picture of state ESA expenditures.

- Provision for lesser governmental entities to voluntarily report ESA expenditures may provide a more complete picture of governmental ESA expenditures. This might be accomplished electronically, allowing the appropriate official to certify the accuracy of the information. Similarly, a provision for private entities to voluntarily electronically report and to attest to the accuracy of the reported expenditures may provide a more complete picture of total ESA expenditures.

XI. Appendices

Appendix 1: Delisted Species Report as of 5/4/05

Date Species First Listed	Date Delisted	Species Name	Reason Delisted
3/11/1967	6/4/1987	Alligator, American (Alligator mississippiensis)	Recovered
11/6/1979	10/1/2003	Barberry, Truckee (Berberis (=Mahonia) sonnei)	Original data in error (Taxonomic revision)
2/17/1984	2/6/1996	Bidens, cuneate (Bidens cuneata)	Original data in error (Taxonomic revision)
8/27/1984	2/23/2004	Broadbill, Guam (Myiagra freycineti)	Extinct
4/28/1976	8/31/1984	Butterfly, Bahama swallowtail (Heraclides andraemon bonhotei)	Original data in error (Act amendment)
10/26/1979	6/24/1999	Cactus, Lloyd's hedgehog (Echinocereus lloydii)	Original data in error (Taxonomic revision)
11/7/1979	9/22/1993	Cactus, spineless hedgehog (Echinocereus triglochidiatus var. inermis)	Original data in error (Not a listable entity)
9/17/1980	8/27/2002	Cinquefoil, Robbins' (Potentilla robbinsiana)	Recovered
3/11/1967	9/2/1983	Cisco, longjaw (Coregonus alpenae)	Extinct
7/24/2003	7/24/2003	Deer, Columbian white-tailed Douglas County DPS (Odocoileus virginianus leucurus)	Recovered
6/2/1970	9/12/1985	Dove, Palau ground (Gallicolumba canifrons)	Recovered
3/11/1967	7/25/1978	Duck, Mexican U.S.A. only (Anas "diazi")	Original data in error (Taxonomic revision)
6/2/1970	8/25/1999	Falcon, American peregrine (Falco peregrinus anatum)	Recovered
6/2/1970	10/5/1994	Falcon, Arctic peregrine (Falco peregrinus tundrius)	Recovered
6/2/1970	9/12/1985	Flycatcher, Palau fantail (Rhipidura lepida)	Recovered
4/30/1980	12/4/1987	Gambusia, Amistad (Gambusia amistadensis)	Extinct
4/29/1986	6/18/1993	Globeberry, Tumamoc (Tumamoca macdougalii)	Original data in error (New information discovered)
3/11/1967	3/20/2001	Goose, Aleutian Canada (Branta canadensis leucopareia)	Recovered
10/11/1979	11/27/1989	Hedgehog cactus, purple-spined (Echinocereus engelmannii var. purpureus)	Original data in error (Taxonomic revision)
12/30/1974	3/9/1995	Kangaroo, eastern gray (Macropus giganteus)	Recovered

12/30/1974	3/9/1995	Kangaroo, red (Macropus rufus)	Recovered
12/30/1974	3/9/1995	Kangaroo, western gray (Macropus fuliginosus)	Recovered
6/2/1977	2/23/2004	Mallard, Mariana (Anas oustaleti)	Extinct
4/26/1978	9/14/1989	Milk-vetch, Rydberg (Astragalus perianus)	Original data in error (New information discovered)
6/2/1970	9/21/2004	Monarch, Tinian (old world flycatcher) (Monarcha takatsukasae)	Recovered
6/2/1970	9/12/1985	Owl, Palau (Pyrroglaux podargina)	Recovered
6/14/1976	1/9/1984	Pearlymussel, Sampson's (Epioblasma sampsoni)	Extinct
Not available	2/4/1985	Pelican, brown U.S. Atlantic coast, FL, AL (Pelecanus occidentalis)	Recovered
7/13/1982	9/22/1993	Pennyroyal, Mckittrick (Hedeoma apiculatum)	Original data in error (New information discovered)
3/11/1967	9/2/1983	Pike, blue (Stizostedion vitreum glaucum)	Extinct
10/13/1970	1/15/1982	Pupfish, Tecopa (Cyprinodon nevadensis calidae)	Extinct
9/26/1986	2/28/2000	Shrew, Dismal Swamp southeastern (Sorex longirostris fisheri)	Original data in error (New information discovered)
6/4/1973	10/12/1983	Sparrow, Santa Barbara song (Melospiza melodia graminea)	Extinct
3/11/1967	12/12/1990	Sparrow, dusky seaside (Ammodramus maritimus nigrescens)	Extinct
11/11/1977	11/22/1983	Treefrog, pine barrens FL pop. (Hyla andersonii)	Original data in error (New information discovered)
9/13/1996	4/26/2000	Trout, coastal cutthroat Umpqua R. (Oncorhynchus clarki clarki)	Original data in error (Taxonomic revision)
6/14/1976	2/29/1984	Turtle, Indian flap-shelled (Lissemys punctata punctata)	Original data in error (Erroneous data)
6/16/1994	6/16/1994	Whale, gray except where listed (Eschrichtius robustus)	Recovered
Not available	4/1/2003	Wolf, gray U.S.A. (delisting of all other lower 48 states or portions of lower 48 states not otherwise included in the 3 distinct population segments). (Canis lupus)	Original data in error (Taxonomic revision)
7/19/1990	10/7/2003	Woolly-star, Hoover's (Eriastrum hooveri)	Recovered & Original data in error (New information discovered)

Appendix 2: Active Lawsuits 2/16/05

Region (FO)	Species	Case Name (Case no.; Court)	Issue/Allegation	Date (Filed)	Note	SOL	DOJ
R6	2 R6 milk-vetches: Homgren and Shivwit's milk-vetch	CBD v. Williams (04-1651-HHK ; D. D.C.)	failure to designate CH, implement RP	09/27/2004	SM dates: pch 7/20/07; fch 7/18/08.	No Attorney Identified	Flax
R4	3 beach mice: Alabama Beach Mouse, Perdido Beach Mouse and Choctawhatchee Beach Mouse	Sierra Club and CBD v. Norton (No. 03 377-CB-C ; S.D. Alab.)	Failure to revise CH	06/17/2003	Cross MSJ filed 12/20/04. S'ment memo dates: 11/15/05, 9/30/06 PK-CBM; 1/18/06, 1/15/07 ABM.	R-Mott	McNeil, B
R6	4 R6 species: Gunnison's prairie dog, Dakota skipper, Black Hills mountain snail, Uinta moutainsnail	Biodiversity Conservation Alliance, et al. v. Norton (1:04-cv-02026-GK ; D.D.C.)	Failure to make 90-day findings	11/18/2004	Answer due January 18	No Attorney Identified	Flax
R1	6 Southern CA plants (Big Bear Valley sandwort, ash-gray Indian painbrush, s. mountain buckwheat, San Bernardino bluegrass, CA dandelion, Hidden Lake bluecurls)	CBD and CNPS v. Norton (04-1150 RT SGLx ; C.D. Cal.)	Failure to designate CH	09/13/2004	Answer filed 11/19/04.	R-O'hara	Russell
R4	Agave eggersiana and Solanum conocarpum	CBD v. Norton (1:04-CV-2553 ; N.D. Ga.)	Failure to issue a 12m finding	09/01/2004	Answer filed 11/8/04. SM date: 2/28/06.	R-Stevens	Eitel
R4	Alabama sturgeon	Alabama-Tombigbee Rivers Coalition et al., v. Babbitt (CV-01-P-0194-S ; N.D. Ala.)	APA/FACA challenge to listing	01/24/2001	5/04: Briefing on Ps request for an evidentiary hearing	No Attorney Identified	Cohen
R2	Aplomado falcon	Forest Guardians et al. v. FWS (CIV-05-0001 ; D. N.M.)	Failure to make petition findings on petition to revise CH	01/03/2005	Answer due ?	R-Schoessler	Eitel
R6	Arctic grayling	CBD and Western Watersheds Project v. FWS (103CV01110 ; D. D.C)	Emergency listing/12-month finding	05/21/2003	12/14/04 order: supp record by 1/13/05. Brief due 2/3/05; reply due 3/7/05.	No Attorney Identified	Isenberg
R4	Blue shiner and	CBD et al. v.	Failure to	09/02/2004	Reply brief	R-Stevens	Eitel

	Goldline darter	Hamilton, et al. (1:04-CV-2573 ; N.D. Ga.)	designate CH		filed 12/13/04 (Mo. to dismiss based on expiration of SoL).		
R8	Buena Vista Lake Shrew	Kern County Farm Bureau, et al., v. Badgley and CBD (CIV F-02-5376 AWI DLB ; E.D. Cal.)	merits of listing, violation of APA; failure designate CH (cross-claim)	04/09/2002	1/12/04 CO: win on merits of listing; pCH due 7/12/04, fCH 1/12/05 (publish by). On appeal.	R-Monroe	Whittle
R1	Bull trout (Columbia River, Klamath Basin)	Alliance for the Wild Rockies and Friends of the Wild Swan v. Allen (04-1813 BR ; D. Ore.)	Merits of CH	12/14/2004	Answer due?	R-Swan	Williams
R1	California spotted owl	CBD v. Norton (3:04-cv-01861-VRW ; N. D. Cal.)	Challenge to 12 month (not warranted) finding	05/11/2004	Reply brief due 2/23/05.	R-O'hara	Floom
R1	California tiger salamander (Rangewide + Sonoma and Central CH)	CBD and EDC v. FWS (C-04-4324 FMS ; N.D. Cal.)	Challenge of rangewide rule and failure to designate CH for Sonoma and Central pops	10/13/2004	Answer filed 12/13/04. SA pending for CH claims. Admin record due 2/28/05.	R-Monroe	McNeil, B
R1	California tiger salamander (Santa Barbara County and Sonoma County DPSs)	Home Builders Association of N. CA v. Williams, Norton and Thompson (CIV.S-04-0345 LKK GGH ; E.D. Cal.)	Merits of listing, DPSs invalid	02/19/2004	Joint mo to dismiss filed 10/1/04. Hrg held 11/19/04. Ct to issue dismissal order.	R-Monroe	McNeil, B
R1 R5 R6	Canada lynx, merits of listing and counterpart regs	DOW v. Norton (1:04CV01230 ; D.D.C. (GK))	threatened status (uplist to endangered); counterpart regs	07/22/2004	Answer submitted 9/23/04, initial scheduling conference 10/29/04	No Attorney Identified	Floom
R2	Cicurina cueva	Save Our Springs Alliance v. Norton (A04CA314 LY ; W. D. Tex.)	Failure to make a 90-day finding.	05/25/2004	Fully briefed. SM dates: 90d, 1/20/05; 12m 12/8/05.	R-Tade	Rodriguez
R1	Coastal cutthroat trout, southwestern Washington/Columbia River DPS	CBD, et al. v. USFWS (05-0165 ; D. Ore.)	Merits of withdrawal of proposed rule	02/03/2005	Answer due ?	No Attorney Identified	No Attorney Identified

R6	Colorado River cutthroat trout	Colorado River Cutthroat Trout v. Norton (Civ. No. 1:00-CV-2497 ; D. D.C.)	merits of "not substantial" 90-day finding	08/20/2004	Answer due 11/19/04, Admin Rec 12/20/04	No Attorney Identified	Floom
R6	Douglas County (Northern) pocket gopher	Center for Native Ecosystems and Forest Guardians v. Norton (05-Rb-188 (OES) ; D. Color.)	failure to make petition findings	02/02/2005	petition submitted 3/20/03	AUSA-Amanda Roque R-Graf	No Attorney Identified
R1 R6	Eastern Sage Grouse	Institute for Wildlife Protection v. Norton (CV 03-5006 (RBL) ; W.D. WA)	failure to make timely 90-day finding	01/06/2003	90-day published 1/6/04. On appeal 04-36067 (9th Cir.).	W-Goldfarb R-Graf	Baca
R1	Flat-tailed horned lizard	Tucson Herpetological Society v. Norton (04-CV-75 ; D-AZ)	Merits of withdrawal of proposed rule to list	10/30/2003	8/6/04: Briefing on the adequacy of the AR. Submit documents to ct by 11/5 for in camera review.	No Attorney Identified	Govindan
R6	Graham's penstemon	Center for Native Ecosystems v. Norton (Civ. No. 03-M-2300 (PAC) ; D. Colorado)	failure to make petition findings	11/18/2003	will be made candidate in new CNOR, moot out case?	No Attorney Identified	No Attorney Identified
R6	Great Plains piping plover	Nebraska Habitat Conservation Coalition v. USFWS (4:03-CV 3059 ; Dist. Neb)	Merits of CH, APA, NEPA	02/14/2003	2/04: briefing on Ps motion to supplement admin record	R-Zallen	Whittle
R1 R6	Grizzly bear (North Cascades Ecosystem population)	Northwest Ecosystem Alliance and DOW v. Norton (2:04-cv-01331-JCC ; D. Wash. Seattle div.)	Merits WBP "reclassify," Emergency rule, RP	06/04/2004	Working on admin record to file w/answer.	No Attorney Identified	McNeil, B
R6	Gunnison sage grouse	American Lands Alliance v. Norton (1:04CV00434 ; D. D.C.)	Merits PMG, Emergency rule	03/17/2004	Admin record due 9/22 (extended); Status hearing Oct. 21	R-Graf	Maysonnette
R1	Island marble butterfly	Xerces Society v. Norton (C 04-2041 Z ; W.D.	Failure to make 90-day and 12-month findings	09/28/2004	Answer filed 12/20/04. SM dates:	R-Nagle	Eitel

		Wash)			90d-2/5/06; 12m-11/5/06		
R8	Kootenai River population of white sturgeon	Center for Biological Diversity and Ecology Center v. US ACOE and US FWS (CV 03-29-M-DWM ; D. Mont., Missoula Div)	merits of CH (not enough); ACOE continued jeop.	02/21/2003	Briefing schedule: cross SJ, 11/19/04; Response, 12/20/04; reply, 1/14/05.	R-Nagle	Lowery
R1	Mono Basin sage grouse	Institute for Wildlife Protection and Dr. Herman v. Norton and Williams (CO2-1404 P ; W. D. WA)	Failure make timely 90-day finding; emergency listing	07/03/2002	CO 12/3/03 in favor of D's. On appeal (04-35104)	No Attorney Identified	No Attorney Identified
R6	Prebles Meadow jumping mouse (Mountain States Legal Foundation)	Mountain States Legal Foundation v. Norton (03 CV 250J ; D. WY)	merits listing threatened and CHD	12/09/2003	Stayed pending decision on delisting.	No Attorney Identified	Howell
R6	Prebles meadow jumping mouse	City of Greely v. US FWS (Civ. 03-1607 (OES) ; Dist. Colorado)	merits of critical habitat designation	08/22/2003	Stayed pending a delisting decision.	No Attorney Identified	No Attorney Identified
R1	Pygmy rabbit (rangewide)	Western Watersheds Project, et al. v. USFWS (CIV 04-440-N-LMB ; D. Idaho)	Failure to issue 90d/12m petition findings	08/31/2004	Response brief due 1/28/05. SM dates: 90d, 5/16/05; 12m, 2/15/06.	AUSA-Ferguson R-Koch	No Attorney Identified
R1	Rio Grande cutthroat trout	CBD v. Norton (CIV-03-0252 ; D. N.M.)	merits of not warranted finding	02/25/2003	9/04: Briefing on Ps petition for review of agency action	R-Spaulding	Govindan
R2	Roundtail and headwater cubs	CBD v. Norton (04-CV-496 ; D. Ariz.)	Failure to make 90day and 12month findings	09/20/2004	Answer filed 11/29/04. SM dates: 90-1/13/06; 12m-10-20-06.	R-Spaulding	Eitel
R1	San Fernando Valley spineflower	CA Native Plant Society v. Norton ((1:03CV01540) RBW ; D.D.C.)	Merits of WBP finding	07/17/2003	6/04: Briefing on SJ complete. 6/04: Briefing on SJ complete. Oral argument set for	R-O'hara	McNeil, B

					2/18/05.		
R1	Slickspot peppergrass	Western Watersheds Project v. Norton (Civ 04-168-S-EJL ; D. Idaho)	Merits of withdrawal listing	04/05/2004	Cross SJ/response due 1/21/05.	R-Viscusi	Whittle
R8	Unarmored 3-spine stickleback	City of Santa Clarita and Ventana Conservation and Land Trust v. Interior, et al. (CV -02-00697-GAF (RCx) ; C.D. Cal.)	Failure to designate CH; 2 Ventura BOs	01/24/2002	Admin record filed 7/21/04. Response brief due 1/18/05.	W-Goldfarb R-O'hara	Gustafson Weiland
R8	Unarmored threespine stickleback (CBD)	CBD, et al. v. USFWS (No. 04-55084 ; 9th Cir. Appeal)	failure to desginate CH (from 20 yrs ago)	01/08/2004	Ps Appeal of 11/12/03 dist ct order granting SJ for FWS.	W-Goldfarb AUSA-Hikida R-O'hara	No Attorney Identified
R1	Western gray squirrel, Washington Population	Northwest Ecosystem Alliance v. USFWS (CV'03 1505 PA ; D. Or.)	Merits of not warranted finding	11/06/2003	8/2/04: Ct granted SJ in our favor. 9/15/04: Ps filed notice of appeal.	R-Hoobler	Rizzardi
R1	Yosemite Toad and Mountain yellow-legged frog	Center for Biological Diversity v. Norton (03-CV-1758 ; E.D. Cal.)	merits of warranted but precluded finding	04/01/2003	6/22/04: Ct granted SJ for FWS. 8/4/04: Ps filed notice of appeal. Appellate brief due 1/19/05.	No Attorney Identified	Govindan
R1 R6	western sage grouse	Institute for Wildlife Protection v. Norton (CO 3-1251P ; W.D. Wash.)	merits of "not substantial" 90-day finding	06/08/2003	8/10/04: Ct granted SJ for Service. On appeal 04-35912 (9th).	No Attorney Identified	McNeil, B

Active Lawsuit Summary		
Type	**Number of lawsuits**	**Number of species**
90 day petition	10	12
1 year petition	9	13
Final listing	12	11
Critical habitat	11	19
Merits challenge	16	15
Freedom of information	0	0
Recovery	1	2
Other	7	9
Total	**33**	**43**

Appendix 3: The current FWS listing process – Approximate range of average costs of rulemaking

Approximate Cost Range in FY05

- Proposed Listing Rule ˜ $75,000 - $125,000
- Final Listing Rule ˜ $50,000 - $140,000
- 90-Day Petition Finding ˜ $15,000 - $50,000
- 12-Month Petition Finding ˜ $45,000 - $125,000 (has been as much as $625,000 for sage grouse)

- Cost per Federal Register page (see note below) = $465
- Cost per full map page submitted to Federal Register = $495

(*e.g.*, FR Costs per CH Rule ˜ $15,000 - $120,000)

Critical Habitat:

- Prior to 1978: 30 designations for 185 species
- From 1979 to 1990: 73 designations for 403 species
- Currently: 473 designations for 1,264 listed spp.

- Approx. Cost for Each Critical Habitat Designation:

  - Proposed CH ˜ $180,000 - $925,000
  - Final CH ˜ $72,000 - $560,000
  - Econ. Analysis ˜ $150,00 - $250,000
  - NEPA $25,000 – 415,000
  - Printing Costs ˜ $15,00 - $120,000

Listing Program Budget Allocation:

- FY04 ˜ $12.3 million w/ $8.9 million CH subcap
- FY05 ˜ $15.9 million w/ $11.6 million CH subcap

Note: Approximately three, double-spaced, typed pages in Microsoft Word equate to one page published in the Federal Register. One page published in the Federal Register costs $465.

Appendix 4: Cooperative Endangered Species Conservation Funds

	Fiscal Year 2001	Fiscal Year 2002	Fiscal Year 2003	Total
Total Traditional Grants to States:	7,803,400	8,203,906	8,165,223	24,172,529
Total HCP Planning Assistance Grant Awards:	663,500	6,650,000	6,606,775	19,891,775
Total HCP Land Acquisition Grants	68,389,365	51,784,400	51,136,439	171,310,204
Total Recovery Land Acquisition Grants	10,404,277	17,754,001	12,824,246	40,982,524

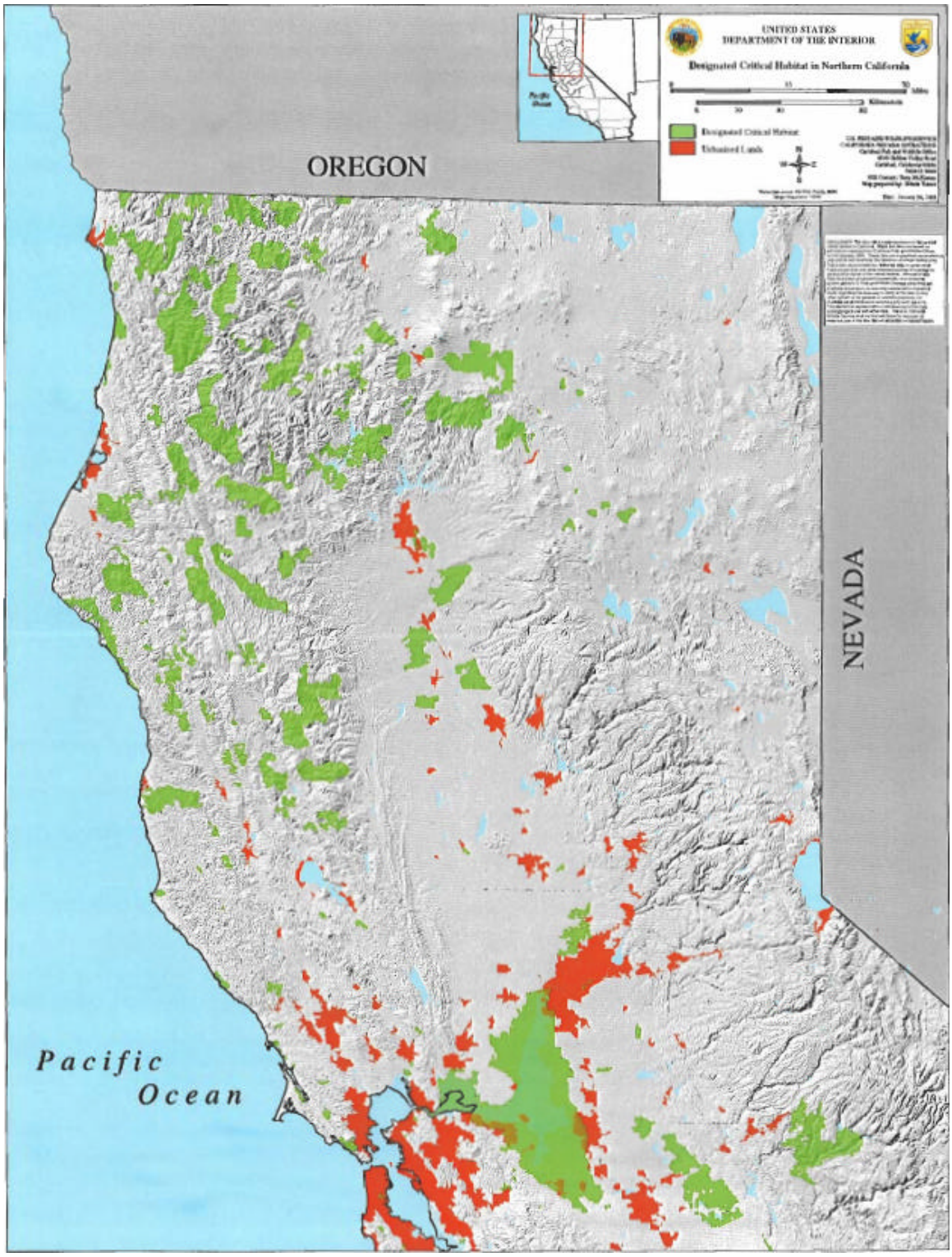
Appendix 5: Table of FWS ESA Actions

Action	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005 [2]
ESA Listing Budget	$6,341,000	$9,000,000	$9,077,000	$12,300,000	$16,175,000
Petitions Received and Awaiting Action (listing / delisting) [1]	3 / 0	11 / 5	15 / 2	23 / 3	0 / 2
90-day Findings Completed (listing / delisting) [1]	5 / 1	1 / 2	6 / 2	4 / 5	8 (14) / 0(6)
12-Month Findings Completed (listing / delisting) [1]	6 / 1	4 / 0	7 / 1	2 / 2	2 (6) / 1 (3)
Proposed Listings [1]	15	16	1	1	0 (2)
Final Listing Decisions [1]	14	14	6	7	3 (10)
Critical Habitat Proposals [1]	157	279	30	13	9 (18)
Critical Habitat Designations [1]	21	7	389	27	4 (35)
NOIs Received (Listing / Recovery)	> 56 / No data available	17 / No data available	49 / 15	32 / 5	3 / 1
Litigation Support ($$)	Do not track	Do not track	Do not track	Do not track	Do not track
Recovery Plans Drafted [1]	2	0	5	33	30
Final Recovery Plans Published [1]	20	30	20	12	8
Consultations Completed (Formal)	1,232	5,248	2,027	>4,000	No estimates available
Consultations Completed (Informal)	72,052	71,755	54,443	>71,000	No estimates available
HCPs Completed	40	45	24	38	No estimates available
Proposed Delisting Rules [1]	0	3	1	2	1 (3)
Final Delisting Rules [1]	1	1	3	4	0 (2)

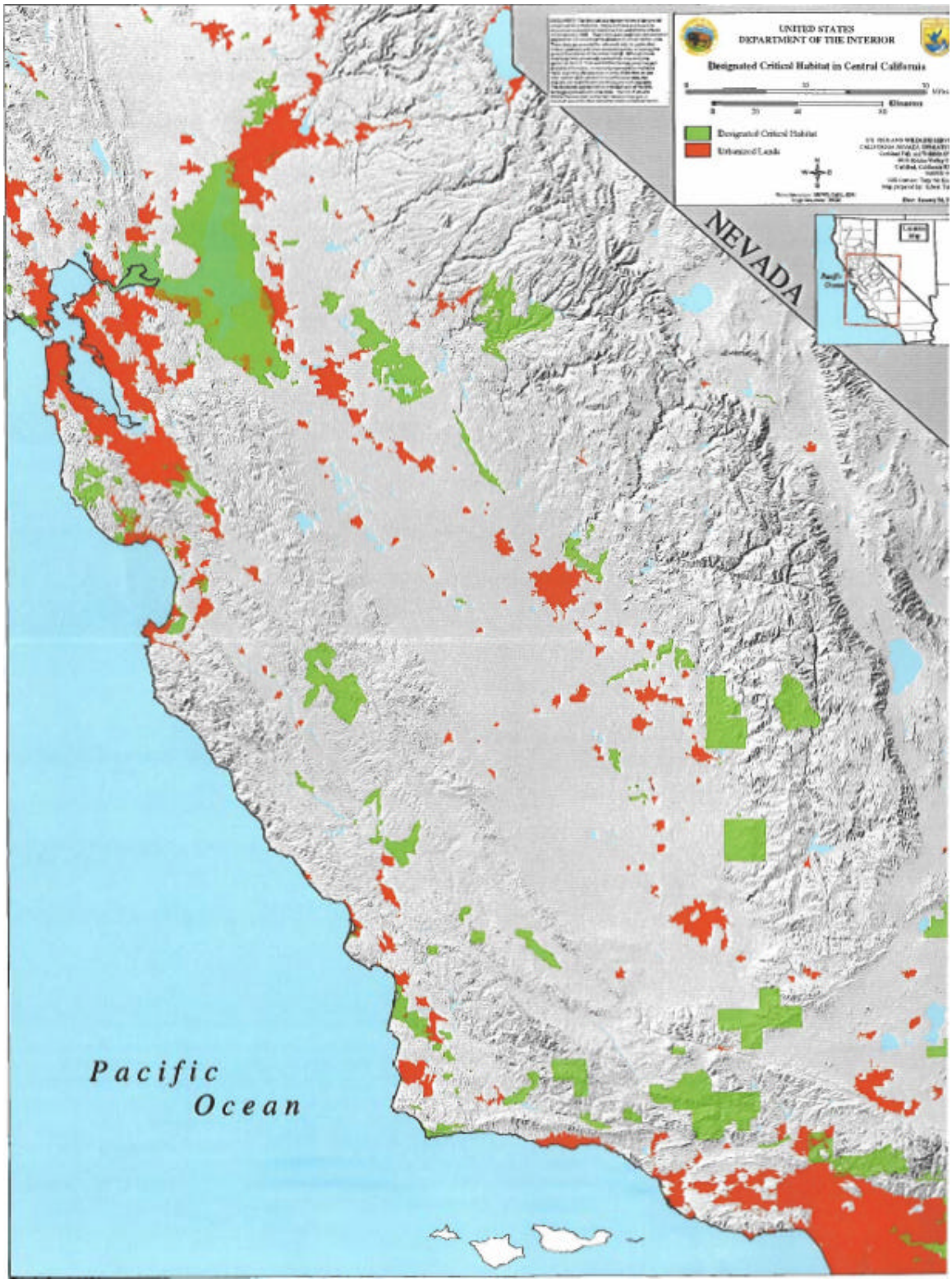
1. Reflects the number of species. For example, in FY 2001 there were 3 species that FWS was petitioned to list.
2. Numbers in the FY 2005 column are as of 2/3/05. Projected estimates, where possible, for the remainder of the FY are shown in parenthesis.

Appendix 6: Maps of California Critical Habitat

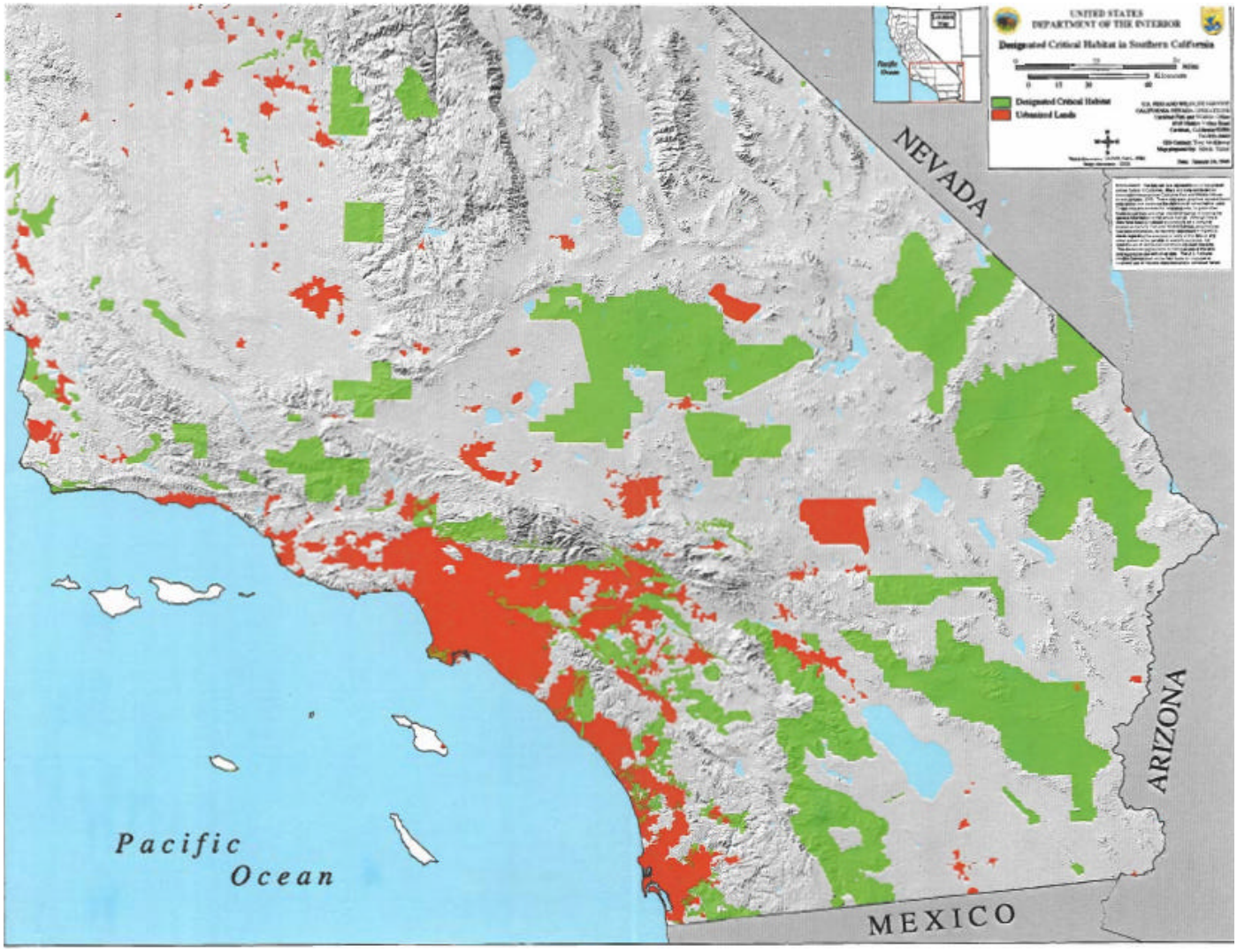
6A: Northern California: Green shading represents designated critical habitat and red shading represent metropolitan areas. The two may overlap**.**



6B: Central California



6C: Southern California



Endnotes

[1] Public Law 93-205, Approved Dec.28, 1973, 87 Stat. 884.
[2] The Secretary of Interior and the Secretary of Commerce are vested with authorities and obligations under the ESA. The secretaries have delegated administration of the ESA to the USFWS and NMFS respectively.
[3] The term "endangered" is used herein to encompass both "endangered" and "threatened" species unless otherwise noted. An "endangered" species is one that is in danger of extinction throughout all or a significant portion of its range. Sec.3 (6). A "threatened" species is one that is likely to become endangered in the foreseeable future. Sec. 3 (20) The term "species" is used herein to encompass species, subspecies and distinct population segments as in the ESA's definitions at Sec 3 (16). It is also used to encompass "Evolutionarily Significant Units," a NMFS term. See: 56 FR 58612-58618; November 20, 1991.
[4] Under the Endangered Species Act both domestic and foreign species may be listed. Species are added to a list published by the Secretary of Interior in accordance with Sec (4)(c). Foreign species are included on the list as the ESA is used by the United States as the implementing instrument for Convention on International Trade in Endangered Species of Wild Flora and Fauna. Additionally, a species may be included on the endangered list more than once. In explaining the number of US species FWS provides the following information: "*There are 1857 total listings (1292 U.S.). A listing is an E or a T in the "status" column of 50 CFR 17.11 or 17.12 (The Lists of Endangered and Threatened Wildlife and Plants). The following types of listings are combined as single counts in the table above: species listed both as threatened and endangered (dual status), and subunits of a single species listed as distinct population segments. Only the endangered population is tallied for dual status populations (except for the following: olive ridley sea turtle; for which only the threatened U.S. population is tallied. The dual status U.S. species that are tallied as endangered are: chinook salmon, gray wolf, green sea turtle, piping Plover, roseate tern, sockeye salmon, steelhead, Steller sea-lion. The dual status foreign species that are tallied as endangered are: argali, chimpanzee, leopard, saltwater crocodile. Distinct population segments tallied as one include: chinook salmon , chum salmon , coho salmon , dugong , gray wolf , Mariana fruit Bat (=Mariana flying fox) , steelhead. Entries that represent entire genera or families include: African viviparous toad, gibbons, lemurs, musk deer, Oahu tree snails, sifakas, uakari (all species).*
http://ecos.fws.gov/tess_public/TESSBoxscore
[5] USWFS, Budget Justifications and Performance Evaluation for Fiscal Year 2005. The estimated expenditures for 2004 do not include general business operation expenditures. While FWS's endangered species account is a figure that is often cited with regard to Federal investment in the endangered species program, monies from many other FWS accounts may also be directed to or benefit endangered species. For example, of 13 FY 2005 projects summarized under FWS's Land Acquisition account ($38.1 million estimated in 2004) for National Wildlife Refuges or Wildlife Management Areas, 11 include endangered or threatened species in the project description or purpose. Some of the other FWS accounts for which the ESA is cited as an authorizing statute include the State and Tribal Wildlife Grant Fund ($69 million enacted in 2004), the Private Stewardship Grant Program ($7.4 million estimated in 2004) and the Landowner Incentive Program ($26.6 million enacted in 2004).
[6] "ESA, PR, and NMFS Funding", undated, NMFS. NMFS spends additional monies on endangered species through accounts such as its Pacific Salmon Recovery Fund, which spent some $78 million in FY 2003 on species outside of Alaska. "Pacific Salmon Recovery Funding", undated, NMFS.
[7] Sec. 4 (f)(3) requires the Secretary of Interior to "report every two years…on the status of efforts to develop and implement recovery plans for all species listed pursuant to this section and on the status of all listed species for which such plans have been developed." The ESA's Sec. 18 requires the Secretary of Interior to provide an annual accounting of reasonably identifiable federal and state expenditures that are made primarily for the conservation of endangered and threatened species.
[8] Under Sec. 4 (c)(1) the Secretary of Interior is required to publish in the Federal Register and revise "from time to time" a list of all species determined to be endangered or threatened. See: Endangered and Threatened Wildlife and Plants 50 CFR 17.11 and 17.12, December 1999. Information regarding listed species is now available on the Service's website< http://endangered.fws.gov/wildlife.html#Species>.
[9] http://endangered.fws.gov/recovery/reports_to_congress/2001-2002/2001-2002_full_report.pdf
[10] 50 CFR 424.11(d).
[11] Three of the seven delisted foreign species were Australian kangaroos that FWS delisted on the basis of recovery. At delisting FWS stated, "…the four [Australian] states that commercially harvest kangaroos…had developed and implemented adequate and effective conservation programs that ensured the protection of these species. The Service additionally found that kangaroo populations were high and

that the three species were protected by appropriate legislation, had their populations regularly monitored by direct and indirect procedures, and were managed by a complex licensing system which regulated the extent of the legal harvest." 60 FR 12887-12906.

[12] According to FWS, following listing a "…literature review was conducted to see if supporting evidence justified its current endangered status. No such supporting data could be found." FWS also interviewed turtle experts, one of whom advised the Service, "[h]ow [the Indian flapshell turtle] ever made Appendix I [of the CITIES list] is a big mystery." 49 FR 7394-7398.

[13] Three of the foreign delisted species are birds native to Palau (the Palau dove, flycatcher and owl). 50 FR 37192-37194. According to the Government Accounting Office, "[a]lthough officially designated as recovered, the three Palau species owe their 'recovery' more to the discovery of additional birds than to successful recovery efforts." GAO, Endangered species management programs could enhance recovery program. Washington, DC: GAO/RCED -89-5.21 December 1988.

[14] 69 FR 8116-8119.

[15] 48 FR 39941-39943.

[16] 52 FR 46083-46087.

[17] 69 FR 8116-8119.

[18] 49 FR 1057-1058.

[19] 48 FR 39941-39943.

[20] 47 FR 2317-2319.

[21] 48 FR 46336-46337.

[22] Sparrows that were in part of dusky seaside sparrow lineage were held in captivity at one time. The notice delisting the dusky indicates that as these captive species were "hybrids" the FWS determined they were ineligible for regulation under the ESA. 55 FR 51112-51114.

[23] FWS stated, "a recent review… indicates that the Bahama swallowtail is only a sporadic resident of the United States. It is not sub-specifically distinct from the non-threatened Bahaman population of this species and does not presently qualify for listing…"49 FR 34501 34504.

[24] 61 FR 4372-4373, 2/6/1996. Cuneate bidens was determined not to be a unique species.

[25] 64 FR 33796-33800, 6/24/1999. Lloyd's hedgehog cactus was determined not to be a unique species.

[26] 58 FR 49244-49247, 9/22/1993. Subsequent data showed the Mckittrick pennyroyal to be more abundant.

[27] 43 FR 32258-32261, 7/25/1978. The Mexican duck was determined not to be a unique species.

[28] 54 FR 48749-48751, 11/27/1989. The Purple-spined hedgehog cactus was determined not to be a unique species.

[29] 48 FR 52740-52743, 11/22/1983. Subsequent data showed the Pine Barrens tree frog to be more abundant.

[30] 54 FR 37941-37943, 9/14/1989. Subsequent data showed the Rydberg milk-vetch to be more abundant.

[31] 65 FR 10420-10426, 2/28/2000. Subsequent data showed the Southeastern dismal swamp shrew to be more abundant.

[32] 58 FR 49242-49244, 9/22/1993. Subsequent data showed the spineless hedgehog cactus to be more abundant.

[33] 68 FR 56564-56567, 10/1/2003. The Truckee barberry was determined not to be a unique species.

[34] 58 FR 33562-33565, 6/18/1993. Subsequent data showed the Tumamoc globeberry to be more abundant.

[35] 65 FR 24420-24422, 4/26/2000. The coastal cutthroat trout was determined not to be a unique species.

[36] 68 FR 15803-15875, 4/1/2003. Grey wolves remain listed under the ESA; the delisting reflected revisions to the DPSs then listed.

[37] 68 FR 57829-57837, 10/7/2003. Hoover's woolly star was delisted on the basis of new information that showed listing data to be erroneous and recovery.

[38] "Threatened by similarity of appearance" is an ESA listing status whereby a species (which includes parts, products, offspring, eggs or the dead body or parts thereof (Sec.3 (8)) is not endangered but resembles an endangered species and is treated as if it were until proven otherwise. e.g., a skin claimed to be from an alligator may be treated by law enforcement officials as if it was an illegal product derived from an endangered crocodile until proven otherwise. This provision is included to aid law enforcement.

[39] The ESA of 1973 succeeded earlier laws aimed at conserving endangered species and consequently some species were listed prior to the 1973 Act. In February 1967, pursuant to the Endangered Species Preservation Act of October 15, 1966 Secretary of Interior Udall found 77 animals threatened with extinction including the alligator. Of these, 68 are listed as endangered or threatened today, two (the

alligator and Aleutian Canada goose) were delisted under the ESA on the basis of recovery, one (the Mexican duck) was delisted under the ESA on the basis of erroneous data), and three (the blue pike, longjaw cisco, and dusky seaside sparrow) were delisted under the ESA on the basis of extinction. The black toad, the Tule white-fronted goose and Montana westslope cutthroat trout were not listed under the ESA of 1973. http://endangered.fws.gov/1966listing.html.

[40] 52 FR 21059-21064, 6/4/1987, (http://ecos.fws.gov/docs/frdocs/1987/87-12806.pdf).

[41] Lewis, T.A. Searching for truth in alligator country. Natl. Wildl. September-November; 1987.

[42] USFWS. Endangered and threatened wildlife and plants. Final Rule to Remove the American Peregrine Falcon From the Federal List of Endangered and Threatened Wildlife, and To Remove the Similarity of Appearance Provision for Free-Flying Peregrines in the Conterminous United States. 64 FR 46541-46558; 1999.

[43] Burnham, William, Cade, Tom J., Lieberman, Alan J., Jenny, Peter and Heinrich, William. The Endangered Species Act and Hands-on Species Restoration, August 18, 2004.

[44] USFWS. Endangered and threatened wildlife and plants. Final Rule to Remove the American Peregrine Falcon From the Federal List of Endangered and Threatened Wildlife, and To Remove the Similarity of Appearance Provision for Free-Flying Peregrines in the Conterminous United States. 64 FR 46541-46558; 1999.

[45] USFWS. Endangered and threatened wildlife and plants. Removal of Arctic Peregrine Falcon from the List of Endangered and Threatened Wildlife. 59 FR 50796-50805; 1994.

[46] 68 FR 43647-43659, 7/24/2003.

[47] http://ecos.fws.gov/species_profile/servlet/gov.doi.species_profile.servlets.SpeciesProfile?spcode=A002

[48] Liebesman, Lawrence and Rofe Dentson, Endangered Species Deskbook, the Environmental Law Reporter, Washington, D.C. 20003, p13-14.

[49] USFWS. Endangered and threatened wildlife and plants. Removal of the brown pelican in the southeastern United States from the list of Threatened and Endangered Wildlife. Endangered and threatened wildlife and plants. Fed. Reg. 50: 4938-4945; 1985.

[50] 59 FR 31094-31095, 6/16/1994.

[51] McDonald, D., ed. Encyclopedia of mammals. New York, NY: Facts On File; 1984: 216-221.

[52] USFWS. Endangered and threatened wildlife and plants. Removal of the Hoover's woolly- star from the list of Threatened and Endangered Wildlife. Endangered and threatened wildlife and plants. 68 Fed. Reg. 57829-57837; 2003.

[53] USFWS, Endangered and Threatened Wildlife and Plants; Removal of *Potentilla robbinsiana* (Robbins' cinquefoil) From the Federal List of Endangered and Threatened Plants, 67 FR 54968-54975; 2002.

[54] USFWS. Endangered and threatened wildlife and plants. Reclassification of the Tinian monarch from endangered to threatened status. Fed. Reg. 52: 10890-10829;1987.

[55] Under the ESA "take" of endangered species is prohibited and is defined to mean to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or attempt to in engage in any such conduct" Sec. 3(19). Take of threatened species is not prohibited by statute but may be by regulation.

[56] 49 FR 34501-34504, 8/31/1984.

[57] 53 FR 37968-37970, 9/28/1988.

[58] 59 FR 54840-54841, 11/2/1994.

[59] 59 FR 13836, 3/23/1994.

[60] 62 FR 24345-24355, 5/5/1997.

[61] 57 FR 28014-28024, 6/23/1992.

[62] 65 FR 25867-25881, 5/4/2000.

[63] 55 FR 9129-9136, 3/12/1990.

[64] 58 FR 49870-49874, 9/23/1993.

[65] 61 FR 32356-32367, 6/24/1996.

[66] 47 FR 4204-4211, 1/28/1982.

[67] 70 FR 1190-1209, 1/6/2004.

[68] 68 FR 59337-59345, 10/15/2003.

[69] 58 FR 68476-68480, 12/27/1993.

[70] 61 FR 31054-31058, 6/19/1996.

[71] 49 FR 27510-27514, 7/5/1984.

[72] 61 FR 10693-10697, 3/15/1996.

[73] 58 FR 49935-49937, 9/24/1993.

[74] 59 FR 50852-50857, 10/6/1994.
[75] 67 FR 1662-1668, 1/14/2002.
[76] The Endangered Species Act and Hands-on Species Restoration; William Burnham, Tom J. Cade, Alan Lieberman, J. Peter Jenny and William Heinrich, August 18, 2004.
[77] 68 FR 15803-15875, 4/1/2003, http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=2003_register&docid=fr01ap03-12.pdf
[78] 69 FR 47212-47248, 8/4/2004, http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=2004_register&docid=fr04au04-15.pdf
[79] 40 FR 29863-29864, 7/16/1975.
[80] 43 FR 16343-16345, 4/18/1978.
[81] http://www.landbigfish.com/fish/fish.cfm?ID=196
[82] http://www.tucalifornia.org/lahontancutthroat.htm
[83] http://waterknowledge.colostate.edu/cutthroa.htm
[84] http://www.tucalifornia.org/paiutecutthroat.htm
[85] 49 FR 22330-22334, 5/29/1984, http://ecos.fws.gov/docs/frdocs/1984/84-14213.pdf
[86] 59 FR 59173-59177, 11/16/1994, http://ecos.fws.gov/docs/frdocs/1994/94-28326.html
[87] The low recovery potential species include 35 that are 'possibly extinct.'
[88] FWS's 2002 report includes 1,254 species. However, no data is provided for the Caribbean Population of the roseate tern.
[89] 48 FR 43098 – 43105, 9/21/83.
[90] USFWS. Report to Congress: Endangered and threatened Species Program. Washington, DC: USFWS; 2002.
[91] USFWS. Report to Congress: Endangered and threatened Species Program. Washington, DC: USFWS; 1990.
[92] USFWS, Report to Congress: Endangered and Threatened Species Program, Washington, DC 1990.
[93] 68 FR 56564-56567, 10/1/2003.
[94] 69 FR 17627-17634. This notice also responded to efforts by the Southern Appalachian Biodiversity Project to compel designation of critical habitat for Eggert's sunflower that resulted in a Court Order requiring USFWS to reconsider its earlier determination that designation for Eggert's Sunflower was "not prudent." In this notice USFWS again determines that that it is "not prudent" to designate critical habitat but does so this time on the grounds that the species does not warrant listing under the ESA. Presumably, by prevailing before court the organization may have been entitled to litigation costs.
[95] 68 FR 27961 27961, 5/22/2003.
[96] 68 FR 27961 27961.
[97] USFWS. June 4, 1993, 58 FR 3240.
[98] The report issued by the NOAA Fisheries uses the term "increasing" as opposed to "improving"; the term "unknown" as opposed to "uncertain"; and the term "mixed" in those cases where listed species have multiple components and the components have different statuses. Biennial Report to Congress On the Recovery Program for Threatened and Endangered Species; October 1, 2000 – September 30, 2002. Office of Protected Resources, National Marine Fisheries Service.
[99] As quoted in, " Improving U.S. Endangered Species Act Recovery Plans: Key Findings and recommendations of the SCB Recovery Plan Project," J. Alan Clark, Jonathan M. Hoekstra, P. Dee Boersma and Peter Kareiva, Conservation Biology, Vol. 16, No. 6, December 2002.
[100] USFWS. Report to Congress: Endangered and threatened Species Program. Washington, DC: USFWS; 1992.
[101] USFWS. Report to Congress: Endangered and threatened Species Program. Washington, DC: USFWS; 1992.
[102] USFWS. Report to Congress: Endangered and threatened Species Program. Washington, DC: USFWS; 1990.
[103] Recovery Plan for the tubercled blossom pearlymussel, turgid blossom pearlymussel and yellow blossom pearlymussel. USFWS, Atlanta, GA.,1985.
[104] http://ecos.fws.gov/tess_public/servlet/gov.doi.tess_public.servlets.EntryPage.
[105] USFWS. 1997. Recovery Plan for the Maui Plant Cluster. USFWS, Portland, OR. pp 67, 68.
[106] USFWS. 1995. Recovery Plan for the Kauai Plant Cluster. USFWS, Portland, OR. p 81.
[107] http://ecos.fws.gov/species_profile/SpeciesProfile?spcode=B03G
[108] USFWS. 1989. Five Tombigbee River Mussels Recovery Plan. USFWS, Atlanta, GA. p 4.

[109] USFWS. 1990. Native Forest Birds of Guam and Rota of the Commonwealth of the Northern Marianas Islands Recovery Plan. USFWS, Portland, OR. p 23.
[110] USFWS. 1982. Eastern Cougar Recovery Plan. USFWS, Atlanta, GA. p 8.
[111] USFWS. 1989. Five Tombigbee River Mussels Recovery Plan. USFWS, Atlanta, GA. p 4.
[112] USFWS. 1998. Recovery Plan for Oahu Plants. USFWS, Portland, OR. p 94.
[113] 69 FR 8116 8119, 2/23/2004.
[114] USFWS. 1996. Big Island Plant Cluster Recovery Plan. USFWS, Portland, OR. p 35.
[115] USFWS. 1998. Recovery Plan for Oahu Plants. USFWS, Portland, OR. p 76.
[116] USFWS. 1996. Big Island Plant Cluster Recovery Plan. USFWS, Portland, OR. pp 81, 82.
[117] USFWS. 2003. Draft Revised Recovery Plan for Hawaiian Forest Birds. USFWS, Portland, OR. p 74.
[118] USFWS. 2003. Draft Revised Recovery Plan for Hawaiian Forest Birds. USFWS, Portland, OR. p 47.
[119] USFWS. 2003. Draft Revised Recovery Plan for Hawaiian Forest Birds. USFWS, Portland, OR. p 29.
[120] USFWS. 1997. Recovery Plan for the Maui Plant Cluster. USFWS, Portland, OR. p 9.
[121] 69 FR 8116 8119, 2/23/2004.
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[174] Not all of the BPA's reported ESA expenditures (lost power generation revenue and power purchases or other ESA expenditures) are passed on to its ratepayers. BPA reduces the cost passed on by taking credits under Section 4(h)(10)(c) of the Regional Act. These credits reflect the portion (22.3%) of power purchases and other expenditures related to endangered species that should be attributed to the other authorized purposes of the hydroelectric projects. Other authorized purposes are navigation, recreation, irrigation and flood control. The portion of the dams' costs allocated to the power purpose is 77.7% overall for the system and ranges from 1.4% to 100% for individual dams. For example, BPA took credits in 2001 that reduced reported ESA expenditures from almost $1.7 billion to $1.1 billion. The latter costs were passed on to customers. BPA roughly estimates that over 20% of the rate paid by preferred customers is related to ESA expenditures.
[175] 48 FR 43098-43105.
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[177] Sec.4 (f)1(A).
[178] A national survey by Professor Don Coursey at the University of Illinois at Chicago (*The Revealed Demand for a Public Good: Evidence from Endangered and Threatened Species*, January 1994), demonstrated significant difference in the value respondents placed on different animal species. At the top of the list "of mean importance" was the bald eagle followed by the whooping crane, green sea turtle, leatherback sea turtle, southern sea otter, grizzly bear, artic peregrine falcon, Hawaiian hawk, key deer and Eastern cougar. At the bottom of the 246 species included in the survey were the Amargosa vole, Marianas fruit bat, Stephans' kangaroo rat, Tooth Cave pseudoscorpion, painted snake coil forest snail, Bee Creek cave harvestman, Tipton kangaroo rat, Tooth Cave spider and lastly, the Krestchmar Cave mold beetle.
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