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CONSERVATION  
Under the  
ENDANGERED  
SPECIES ACT

A Promise Broken



National Wilderness Institute

“Voice of Reason on the Environment”



# CONSEQUENCES OF ADDING SPECIES TO THE ENDANGERED LIST

## MISTAKENLY ENDANGERED



Before addressing the question of whether the current endangered species program results in threatened and endangered species becoming non-threatened and non-endangered, it is important to first review the accuracy with which species are determined to be endangered or threatened. In the first part of this study, the definition of endangered and threatened as provided by the Act is accepted. Accordingly, this study identifies incidents in which species that did not or may not meet that definition have been listed.

### Delisting Data Error

During the nearly 25 years the ESA has been implemented, 27 animals and plants (USFWS 1996d) have been removed from the List of Endangered and Threatened Wildlife and Plants and therefore from under the regulations of the Act. When the USFWS or the NMFS removes an animal or plant from the List, the Service provides a basis for the decision. Under the Endangered Species Act, a species may be removed if it is 'recovered' and therefore no longer merits inclusion, has been determined to be 'extinct', or was originally added to the List in error – a 'data error'. Nine of the 27 species removed from the List were removed on the grounds of 'data error'. Additionally, in the cases of six species which were removed from the List and termed 'recovered', the classification of 'data error' would have been more appropriate. The discussion of these 15 species follows:

**Mexican duck, *Anas diazi*** — On 25 July 1978, the Mexican duck was removed from the List of Endangered and Threatened Wildlife and Plants on the grounds of data error. The delisting notice (USFWS 1978a) states, "all reports and observations of 'Mexican ducks' in the United States and Northern Mexico must now be interpreted to be of only 'Mexican-like ducks'." The notice continues, " 'Mexican ducks'... are only identifiable segments of the entire population, just as brown-eyed and blue-eyed individuals are phenotypic segments of the human species."

**Pine Barrens tree frog, *Hyla andersonii*** — On 22 November 1983, the pine barrens tree frog was removed from the List because of data error. When originally added to the List, only those pine barrens tree frogs found in the frog's southern range were listed. After listing, the USFWS and Florida officials gathered population data about the frog. According to the Service (1983c): "Data were presented which expanded the species' known Florida distribution from 7 Okaloosa County sites to a total of over 150 sites..." in three counties. Further studies including Alabama areas revealed a total of 165 more sites than were believed to exist when a fraction of the frog's population was listed.

**Indian flap-shelled turtle, *Lissemys punctata punctata*** — On 29 February 1984, the Indian flap-shelled turtle was removed from the List because of data error. According to the Service (1984b): "As a result of the Indian flapshell turtle's inclusion on Appendix I of CITES [a United Nations endangered species list] the Service subsequently listed the species as endangered." Following listing a "...literature review was conducted to see if supporting evidence justified



Bruce Means, USFWS

The Pine Barrens tree frog was taken off of the List after it was found to inhabit 20 times as many locations as originally thought.

its current endangered status. No such supporting data could be found.” In a further attempt to find supporting information, the USFWS then contacted turtle experts such as E.O. Moll, who stated that the Indian flap-shelled turtle was “seemingly the most common and widespread turtle in all of India ... How it ever made Appendix I is a big mystery.”

**Bahama swallowtail butterfly, *Heracles (Papilio) andraemon bonhottei*** — The Bahama swallowtail butterfly was removed from the List on 31 August 1984 and officially termed a data error. According to the USFWS (1984f) delisting the butterfly: “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 under the Endangered Species Act, as amended.”

**Palau dove, *Gallicolumba canifrons*, Palau fantail, *Rhipidura lepida* and Palau owl, *Pyroglaux podargina*** — Three birds — the Palau dove, Palau fantail, and the Palau owl were removed from the List on 12 September 1985 and termed by the Service (1984g) to be ‘recovered’. However, a GAO report (1988) stated that “although officially designated as recovered, the three Palau species owe their ‘recovery’ more to the discovery of additional birds than to successful recovery efforts.” In response to the delisting notice for these species, the former Chief Conservationist for the Trust Territory Conservation Office, Robert P. Owen commented (USFWS 1984g), “...the original listing was based on surveys of southern Palau completed by military ornithologists a short time after U.S. forces had invaded Anguar and Peleiu. These invasions caused serious destruction of the vegetation and wildlife. No surveys were made of central or northern Palau at that time because those islands were still being held by Japanese forces.” The delisting notice points out that the Owl may have benefitted from a 1950’s pesticide program designed to eradicate the introduced coconut rhinoceros beetle, *Oryctes rhinoceros*. This beetle has a horn-like protuberance which might, by piercing the stomach, kill an owl which swallowed it. In the notice, the USFWS stated, “the original status information was meager and more recent and complete information is now available. These three Palau species are presently distributed throughout their former habitat and have stable populations that survive at or near their respective carrying capacities.”

**Brown pelican, *Pelecanus occidentalis*** — The eastern population of brown pelican was removed from the List on 4 February 1985 and officially termed a recovery. However, according to the USFWS (1985b): “Population data gathered since listing have questioned the likelihood that the pelican population in Florida was ever endangered, as defined by the Act, and this designation was also questionable for the pelican in South Carolina. These data were 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.” While the pelican may not have warranted inclusion on the List, there has been an actual improvement of brown pelican populations which is not attributable to the Act but to a ban on DDT and limitations on other organochlorine chemicals. The delisting notice dealing with the eastern population of brown pelicans states: “In summary, organochlorine pesticide pollution apparently contributed to the endangerment of the brown pelican....”

**American alligator, *Alligator mississippiensis*** — The American alligator, although technically “threatened by similarity of appearance”, was termed a ‘recovered’ species in 1987 (USFWS 1987b). However, the alligator probably should never have been listed. According to T.A. Lewis (1987), officials with the Florida Fresh Water Fish and Game Commission think the alligator’s population dynamics were misunderstood at the time of listing and that, had they known at the time it was listed what they know now, it would not have been listed. Writing for the National Wildlife Federation, a staunch proponent of the current law, T.A. Lewis (1987) recognized that the “familiar and gratifying” recovery story of the alligator was “mostly wrong.”



Mike Boyland, USFWS

The National Wildlife Federation acknowledged in 1987 that the “familiar and gratifying” recovery story of the American alligator was “mostly wrong.”

**Rydberg milk-vetch, *Astragalus perianus*** — The Rydberg milk-vetch was removed from the List on 14 September 1989 and officially termed a recovery (USFWS 1988b). In testimony before a Senate Committee, then USFWS Director John Turner (USFWS 1992a) explained: “When further surveys turn up sufficient healthy populations to ensure the species’ long-term survival, we consider this a successful accomplishment of an important task. Such new information may make it possible to remove a species

from the List as was the recent case for the Rydberg milk-vetch, a Utah plant.” According to the Service (1988b): “When the species was federally listed in 1978 it was known only from one type location in Bullion Canyon, Piute County, Utah and one population on top of Mt. Dutton, Garfield County, Utah. Extensive studies have been conducted for the last 9 years resulting in the discovery of 11 additional populations and current estimates of well over 300,000 plants.” New data showing that the old data which served as the basis for determining the species to be endangered were in error should lead to a delisting on the basis of data error not recovery.

**Purple-spined hedgehog cactus, *Echinocereus engelmannii* var. *purpureus*** — The purple-spined hedgehog cactus was removed from the List on 27 November 1989 and officially termed a data error. In removing this species from the List, the USFWS (1989a) states: “*Echinocereus engelmannii* var. *purpureus* is a sporadically occurring dark-colored and short-spined phase of the *Echinocereus engelmannii* var. *chrysocentrus* population localized in the Virgin River Basin of southwestern Utah. *Echinocereus engelmannii* var. *chrysocentrus* is common and has a broad distribution in the Mojave Desert of Arizona, California, Nevada and Utah.”

**Tumamoc globeberry, *Tumamoca macdougalii*** — The tumamoc globeberry, a vine determined to be a ‘data error’, was delisted by the Service on 18 June 1993. After including this plant on the List of Endangered and Threatened Wildlife and Plants for 7 years, the USFWS (1993a) determined that “surveys have shown Tumamoc to be more common and much more evenly distributed across its range than previously believed....”

**McKittrick pennyroyal, *Hedoma apiculatum*** — The McKittrick pennyroyal was removed from the List on 22 September 1993 and officially termed a data error. According to the USFWS (1993c): “Irving (1980) reported 7 known locations for McKittrick pennyroyal ... Since 1980 the species’ range has been extended north to Double Canyon, Guadalupe Mountains, New Mexico with many new populations discovered. ... A total of 13 Texas and 23 New Mexico populations are known at this time....”

**Spineless hedgehog cactus, *Echinocereus triglochidiatus*** — The spineless hedgehog cactus was removed from the List of Endangered and Threatened Wildlife and Plants on 23 September 1993 and officially termed a data error as follows (USFWS 1993d): “Historically, the spineless hedgehog cactus has not been recognized as a distinct taxon. ... However, in the early 1970’s Arp (1973) considered it ... ‘a distinct and identifiable population.’ His taxonomic description coincided with the passage of the Endangered Species Act (Act) of 1973, as amended ... and its new provision for the protection of endangered and threatened plants. ... Subsequent to listing the spineless hedgehog cactus, a recovery plan ... was prepared. This plan pointed out that some botanists questioned the taxonomic status of the plant and suggested that further studies were needed to evaluate its taxonomy. Although the Service had listed the spineless hedgehog cactus, subsequent evaluations did not recognize it as a distinct taxon.”

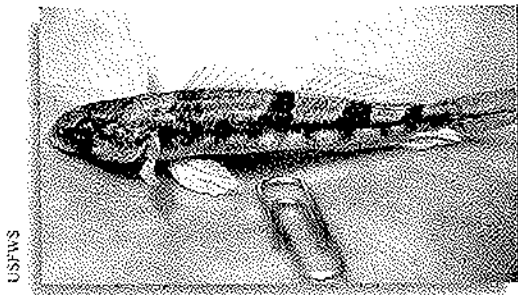
**Cuneate bidens, *Bidens cuneata*** — The cuneate bidens, a Hawaiian plant, was removed from the List of Endangered and Threatened Wildlife and Plants on February 6, 1996, and officially termed a data error. According to the USFWS (1996a): “This action is based upon a review of the best available scientific and commercial data, which indicate that this plant is not a discrete taxonomic entity and therefore does not meet the definition of a species as defined by the Endangered Species Act of 1973, as amended (Act). Extensive studies associated with a recent revision of the Hawaiian members of the genus have concluded that *Bidens cuneata* is an outlying population of *Bidens molokaiensis*, which is common among the windward cliffs of the island of Molokai.”

In addition to those ‘data errors’ already removed from the List, a recent USFWS budget justification (USFWS 1992e) lists 40 species which are to be considered for delisting. In many of these cases, the most likely reason for removal from the List of Endangered and Threatened Wildlife and Plants is data error. For example, in the case of the Maguire daisy (*Erigeron maguirei* var. *maguirei*) the Vinta Basin hookless cactus (*Sclerocactus glaucus* (= *Echinocactus* g., *E. subglaucus*, *E. whipplei* var. g., *Pediocactus* g., *S. franklinii*, *S. whipplei* var. g.)) and the Wright fishhook cactus (*Sclerocactus wrightiae* (= *Pediocactus* w.)), the Service has discovered greater “species abundance”, “additional populations”, greater “range distribution”, and that a ‘variation’ formerly thought to be distinct was not distinct.

## Downlisting Data Error

In addition to adding and removing species from the List of Endangered and Threatened Wildlife and Plants, the USFWS and the NMFS may change the level of protection accorded a plant or animal on the List. A species which is changed from 'endangered' to 'threatened' is said to have been reclassified or downlisted. Species are downlisted if they are judged to have sufficiently improved, if the species is determined to have been accorded endangered status as a result of inaccurate information, or for a few other reasons addressed elsewhere. Nine of the 22 species which have been downlisted are entirely a result of data error while data error is a contributing factor in the reclassification of a tenth species as follows:

**Leopard, *Panthera pardus*** — In March of 1972, the leopard was listed as an endangered species. The notice (USFWS 1982b) downlisting the leopard states: "The placing of the leopard on the United States List of Endangered and Threatened Wildlife and Plants and on Appendix I of the Convention, has generated considerable interest in the species' actual status in the wild. Since the listing four major studies have been completed... Based on the data contained in the status documents enumerated above and other available information, the Service feels now that the leopard on Southern Africa more properly fits the definition of a threatened species... In a 1980 letter of Myers', he indicated that the leopard was 'relatively numerous' in Zaire, Congo and Gabon and that the species retains 'satisfactory numbers' in seven other countries in south-central and eastern Africa."



The snail darter is a well known endangered species that was discovered to be substantially less rare than originally believed.

**Snail darter, *Percina tanasi*** — The snail darter was listed as an endangered species on 9 October 1975. The notice (USFWS 1984e) reclassifying the snail darter from endangered to threatened states: "When the species was listed and its critical habitat designated, the only known population was threatened by the immanent completion of the Tellico Dam and the flooding of the fish's Little Tennessee River habitat ... [After listing] Snail darters were found in the Tennessee River, Loudon County Tennessee, near the mouth of the Little Tennessee River in 1979. Subsequently, they were discovered in South Chickamauga Creek, Hamilton County, Tennessee, in 1980 and later in Catoosa County, Georgia. These discoveries led to additional searches in the Tennessee River and its tributaries. These searches resulted in the discovery of snail darters inhabiting three other Tennessee River tributaries (Sewee Creek, Meigs County, Tennessee; Sequatchie Rive, Marion County, Tennessee;

and Paint Rock River, Jackson and Madison Counties, Alabama), and the main stem of the Tennessee River near the mouth of two tributaries, South Chickamauga Creek (Nickajack Reservoir, Hamilton County, Tennessee), and Sequatchie River (Guntersville Reservoir, Marion County, Tennessee). Review of these data in 1982 by the Snail Darter Recovery Team and the Service during its recovery planning process led the Service to determine that the species could be reclassified from endangered to threatened status."

**Tinian monarch, *Monarcha takatsukasae*** — The Tinian monarch was listed as an endangered species on 2 June 1970. In the notice (USFWS 1987a) reclassifying the Tinian monarch from endangered to threatened, it states: "Its numbers had apparently been reduced by 1945 due to the clearing of forests by the Japanese for sugarcane production and the destruction of remaining forest by military action during World War II (Coults 1931; Owen 1974) ... Since 1945, most of Tinian has been revegetated by a shrubby legume (*Leucaena leucocephala*). The monarch has adapted well to this introduced woody shrub, and is now found abundantly throughout Tinian. Biologists who have visited Tinian over the last 10 years have commented on the general abundance of the monarch (Owen 1974; Pratt et al. 1979), and 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 (Engbring et al. 1986)."

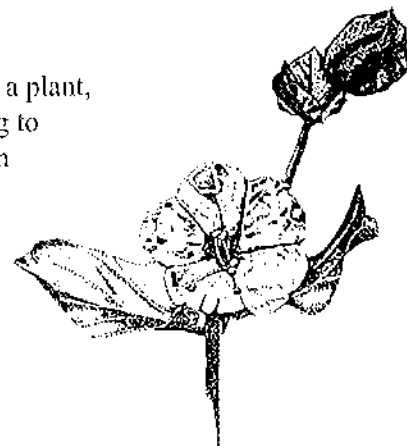
**Aleutian Canada goose, *Branta canadensis leucopureia*** — The Aleutian Canada goose was listed as an endangered species on 11 March 1967. The notice (USFWS 1990g) reclassifying the Aleutian Canada goose from endangered to threatened lists a number of successful management actions which may be the primary reason for downlisting but also

states: “At the time of listing, Aleutian Canada goose population estimates were based upon sparse data . . . The discovery of a remnant breeding population of Aleutian Canada geese in 1982 on Chagulak Island (2,082 acre, 842 hectare) greatly benefitted the recovery program (Bailey and Trapp 19). Another apparent remnant breeding population was discovered in 1979 on Kiliktagik Island (93 hectares) south of the Alaska Peninsula (Hatch and Hatch (183). The Kiliktagik Island nesting location is approximately 600 miles east of what was previously considered the historical breeding range for the species (US Fish and Wildlife Service 1982).”

**Louisiana pearlshell, *Margaritifera hembeli*** — The Louisiana pearlshell cactus was listed as an endangered species on 5 February 1988. The notice (USFWS 1993e) reclassifying the Louisiana pearlshell from endangered to threatened states: “Since the initial listing, the species has been discovered in the Red River drainage of Grant Parish . . . The 1991 survey located the species at 12 sites in 8 streams that are tributary to the Red River. The 1992 survey (Hall 1992) confirmed these findings, extended the range within these streams, and searched more than 50 streams in Grant Rapides, and Winn Parishes, Louisiana . . . it is likely that additional populations of the Louisiana pearlshell occur on private property within the geographic area of the currently known range. The currently known range of this species now consists of 8 streams in the Red River drainage and 11 streams in the Bayou Boeuf drainage.”

**Siler pincushion cactus, *Pediocactus sileri* (= *Echinocactus* s., *Utahia* s.)** — The USFWS (1993f) listed the Siler pincushion cactus as an endangered species in 1979. The notice (USFWS 1993f) reclassifying the Siler pincushion cactus from endangered to threatened states: “When the species was listed as endangered in 1979 (USFWS 1979), the amount of habitat was unknown but presumed to be small. The total amount of occupied habitat remains unknown, but extensive surveys conducted by the Bureau of Land Management (BLM), Arizona Strip District (Hughes 1991), have documented the species on 17,000 hectares (ha) (42,100 acres (ac)) of habitat. The species will likely be found outside this area . . . At the time the plant was proposed for listing, fewer than 1,000 individuals were thought to exist (Phillips et al. 1979). Since that time many more plants have been discovered. *Pediocactus sileri* has a distribution typical of many plant species - a high density in some areas (Gierisch 1981; Hughes 1991) and a low density in others (Gierisch 1981; L. Hughes, BLM, St. George, Utah, pers. comm. 1988) . . . These populations ranged in number from 2,691 plants to 3,775 (an underestimate because all plants were not counted). The three dense populations occupy an area of about 1,700 ha (4,100 acres).”

**MacFarlane’s four-o’clock, *Mirabilis macfarlanei*** — MacFarlane’s four-o’clock, a plant, was reclassified from endangered to threatened status on 15 March 1996. According to the notice (USFWS 1996b): “From 1936 to 1979, *Mirabilis macfarlanei* was known only from two localities with approximately 27 individual plants. Subsequently, *M. macfarlanei* was added to the Federal List of Endangered and Threatened Plants on October 26, 1979 . . . 700 plants were discovered in 1980 on 45 acres . . . [and] . . . Since 1983, 6,485 additional plants have been located on approximately 108 acres, bringing the total number to 7,212 plants inhabiting approximately 163 acres in three disjunct areas.”



MacFarlane’s four-o’clock

**Small-whorled pogonia, *Isotria medeoloides*** — The USFWS listed the small-whorled pogonia as an endangered species on 10 September 1982. In the notice (USFWS 1994b) reclassifying the small-whorled pogonia from endangered to threatened, it states: “At that time, records for the species were known from 48 counties in 16 States and Canada, though there were only 17 extant sites, in 10 States and Ontario, Canada. These sites had less than 500 stems. Subsequent searches led to the discovery of many new sites. In 1991, 86 sites in 15 States and Canada (US Fish and Wildlife Service 1992) were known. By 1993, 17 additional sites in New Hampshire and 1 site in Maine were discovered, bringing the total to 104 extant sites...”

**Maguire daisy, *Erigeron maguirei* var. *maguirei*** — Although the USFWS (1996c) reclassified the Maguire Daisy on 19 June 1996, a USFWS Budget Justification (1991f) states: “The Service completed taxonomic studies which indicated that the Maguire daisy should be recognized without taxonomic varieties.” *Erigeron maguirei* var. *maguirei* was lumped with *Erigeron maguirei* var. *harrisonii*, then a candidate (USFWS 1996c), and the USFWS included this more

abundant and more widely distributed plant on the List as a threatened species rather than delist it. Although the USFWS has listed this plant in numerous budget justifications since 1991 as being a candidate for delisting, it remains on the endangered species List.

**American alligator, *Alligator mississippiensis*** — (see page 10)

### Data Error Revealed in the Report to Congress

For many species which remain on the List of Endangered and Threatened Wildlife and Plants, the Service has determined that information used at the time of the species' addition to the List was in error. A review of USFWS Reports to Congress reveals that the discovery that original data were in error is common.

**Carolina northern flying squirrel, *Glaucomys sabrinus coloratus*** — According to the Report (USFWS 1990k), "One additional population has been located..."

**Gray bat, *Myotis grisescens*** — According to the Report (USFWS 1992e), "biologists in Missouri have discovered three new caves with gray bat populations."

**Ozark big-eared bat, *Plecotus townsendii ingens*** — According to the Report (USFWS 1992e), "Hibernacula and other new sites were discovered..."

**Virginia big-eared bat, *Plecotus townsendii virginianus*** — According to the Report (USFWS 1992e), "Discovery of additional hibernacula and maternity colonies has also contributed to higher known population levels."

**Virginia northern flying squirrel, *Glaucomys sabrinus fuscus*** — According to the Report (USFWS 1990k), "Numerous new captures at sites show the species to be much more abundant than thought..."

**Virgin islands tree boa, *Epicrates monensis granti*** — According to the Report (USFWS 1992e), "...additional populations have recently been found..."

**Cheat Mountain salamander, *Plethodon nettingi*** — According to the Report (USFWS 1990j), "Several new sites were discovered..."

**Santa Cruz long-toed salamander, *Ambystoma macrodactylum croceum*** — According to the Report (USFWS 1990j), "Several new populations have recently been discovered."

**Ozark cavefish, *Amblyopsis rosae*** — According to the Report (USFWS 1990k), "New populations were discovered in Missouri." According to the Report (USFWS 1992e), "Several new populations of Ozark Cavefish have been discovered and protected in Benton County Arkansas..."

**Owens tui chub, *Gila bicolor snyderi*** — According to the Report (USFWS 1990k), "Discovery of a new population."

**Black-capped vireo, *Vireo atricapillus*** — According to the Report (USFWS 1992e), "Additional territories have been found on private lands as a result of increased surveys."

**Least Bell's vireo, *Vireo bellii pusillus*** — According to the Report (USFWS 1992e), "In another hopeful development, vireos have been sighted in where they were previously undetected."

**American burying beetle, *Nicrophorus americanus*** — According to the Report to Congress (USFWS 1990k), "The greatest recovery achievement for this species in the past two years has been the greatly expanded survey efforts in the



Virginia northern flying squirrel

Midwest, and the resulting discovery of beetles in eastern Oklahoma and Arkansas. A few specimens have also been observed in north central Nebraska.”

**Dwarf wedge mussel, *Alasmodonta heterodon*** — According to the Report (USFWS 1992e), “The New York population...discovered in 1990...is believed to be one of the largest.”

**Flat-spined three-toothed land snail, *Triodopsis platysayoides*** — According to the Report (USFWS 1990k), “Six new sites were located in the Cooper’s Rock area on both sides of the Cheat River Gorge.”

**Carter’s mustard, *Warea carteri*** — According to the Report (USFWS 1990 j), “A new population was discovered...”

**Clay phacelia, *Phacelia argillacea*** — According to the Report (USFWS 1990j), “...identified an additional small population...”

**Geocarpon, *Geocarpon minimum*** — According to the Report (USFWS 1990j), “A new population was discovered...”

**Green pitcher plant, *Sarracenia oreophila*** — According to the Report (USFWS 1990j), “...the location ... of an additional colony in the Sand Mountain area...”

**Higuero de Sierra, *Crescentia portoricensis*** — According to the Report (USFWS 1990j), “New populations of Higuero de Sierra...have been discovered.”

**Johnston’s frankenia, *Frankenia johnstonii*** — According to the Report (USFWS 1990j), “New populations have been found in the lower Rio Grande Valley and this species now appears to be more abundant and widespread than previously thought.”

**Key tree-cactus, *Cereus robinii*** — According to the Report (USFWS 1992d), “An inventory of tree-cactus populations by a Florida Atlantic University team indicates the number to be almost 500 clumps, more than 10 times greater than previous estimates.”

**Large-flowered fiddleneck, *Amsinckia grandiflora*** — According to the Report (USFWS 1990k), “New population discovered...”

**Longspurred mint, *Dicerandra cornutissima*** — According to the Report (USFWS 1990k), “A new, small population was discovered...”

**MacFarlane’s four-o’clock, *Mirabilis macfarlanei*** — According to the Report (USFWS 1992c), “The discovery of additional colonies on public lands...have reduced threats to this species range wide.”

**Mancos milk-vetch, *Astragalus humillimus*** — According to the Report (USFWS 1990k), “One new population was discovered...”

**Mead’s milkweed, *Asclepias meadii*** — According to the Report (USFWS 1990k), “New population found in Iowa.”

**Michigan monkey-flower, *Mimulus glabratus var. michiganensis*** — According to the Report (USFWS 1990k), “...another population was discovered...”

**Missouri bladderpod, *Lesquerella filiformis*** — According to the Report (USFWS 1990k), “...13 new occurrences were found...”

**Mountain golden heather, *Hudsonia montana*** — According to the Report (USFWS 1990k), “...discovery of one new population...”



**Navajo sedge, *Carex specuicola*** — According to the Report (USFWS 1990k), "...located a significant number of previously unknown populations..."

**Northeastern bulrush, *Scripus ancistrochaetus*** — According to the Report (USFWS 1992e), "Listing ...has focused attention leading to the discovery of seven additional populations."

**Palmate-bracted bird's-beak, *Cordylanthus palmatus*** — According to the Report (USFWS 1990k), "...two new populations have been discovered on Service lands in the valley."

**Palo de rosa, *Ottoschulzia rhodoxylon*** — According to the Report (USFWS 1992e), "New populations of ...palo de rosa have been discovered."

**Pitcher's thistle, *Cirsium pitcheri*** — According to the Report (USFWS 1992e), "The recent discovery of two new populations has added to the known numbers of this dune-loving plant."

**Prairie bush clover, *Lespedeza leptostachya*** — According to the Report (USFWS 1990k), "Several new occurrences have been recorded..."

**Running buffalo clover, *Trifolium stoloniferum*** — According to the Report (USFWS 1990k), "At the time of listing in 1987 one population was known. We now are aware of 18 populations."

**Small-anthered bittercress, *Cardamine micranthera*** — According to the Report (USFWS 1990k), "...two additional populations have been found..."

**Small-whorled pogonia, *Isotria medeoloides*** — According to the Report (USFWS 1992e), "These efforts have resulted in the discovery of two additional populations and several subpopulations..."

**Swamp pink, *Helonias bullata*** — According to the Report (USFWS 1992e): "Approximately 20 previously unknown populations have been discovered in New Jersey" and "Five previously unknown swamp pink occurrences have been located in Delaware." Regarding swamp pinks in North Carolina, the report states: "Most notable is the discovery of a spruce bog population consisting of 100,000 plants on Forest Service lands."

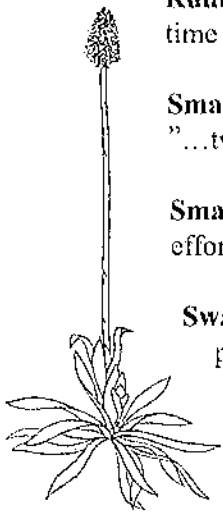
**Texas snowbells, *Styrax texana*** — According to the Report (USFWS 1990k), "...a new wild population of Texas snowbell[s] was recently discovered..."

**Todsens's pennyroyal, *Hedeoma todsenii*** — According to the Report (USFWS 1990k), "Two new populations have been discovered..."

**Uinta Basin hookless cactus, *Sclerocactus glaucus*** — According to the Report (USFWS 1990k), "Possibility of delisting will be evaluated based on new information on species abundance."

**Welsh's milkweed, *Asclepias welshii*** — According to the Report (USFWS 1990k), "A third small population has been discovered..."

**Wright fishhook cactus, *Sclerocactus wrightiae*** — According to the Report (USFWS 1990k), "Population and habitat inventories have identified a greater abundance, range distribution, and additional populations of this species than originally known. Evaluation will be undertaken to consider delisting."



Since it was added to the List, tens of thousands of swamp pinks plants have been discovered.