

GAO

Briefing Report to the Chairman,
Committee on Merchant Marine and
Fisheries, House of Representatives

September 1993

**ENDANGERED
SPECIES**

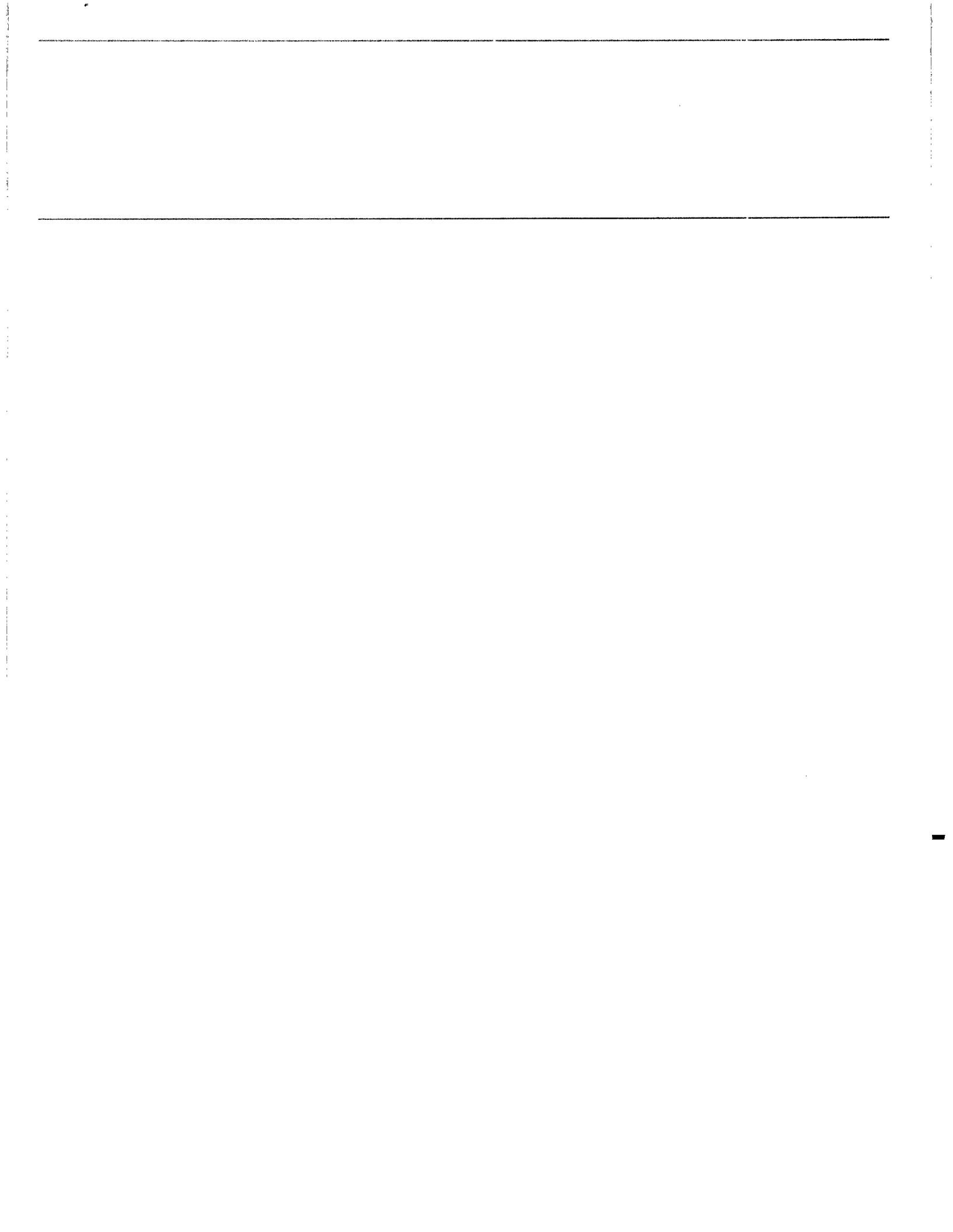
**Public Comments
Received on Proposed
Listings**



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Resources, Community, and
Economic Development Division

B-254618

September 30, 1993

The Honorable Gerry E. Studds
Chairman, Committee on Merchant
Marine and Fisheries
House of Representatives

Dear Mr. Chairman:

As you are aware, one issue likely to be addressed during congressional deliberations on reauthorizing the Endangered Species Act (ESA) is whether there is a need for a scientific peer review of proposed decisions to list species as endangered or threatened under the act. The act requires that these decisions be based on the best available scientific and commercial data, and peer review has been suggested as a way to ensure that this occurs. In anticipation of your Committee's consideration of this issue, you asked us to determine the extent and nature of questions raised about the biological information used as the basis for proposed listings under the act by the Department of the Interior's Fish and Wildlife Service (FWS).

On July 13, 1993, we briefed your office on the preliminary information that we had obtained during our review. At that time, we presented information on the public comments that were provided in response to species' being proposed for listing, the extent and nature of questions raised about the biological basis for the proposed listings, and the frequency of public hearings held on proposed listings. We were asked to provide additional information about the number of petitions to list, delist, or reclassify species which FWS found not merited.

This briefing report presents the final results of our work. In summary:

- Between January 1989 and December 1992, FWS published proposed and subsequent final rules to list a total of 226 plant and animal species as either endangered or threatened under the ESA (see app. I) and withdrew proposed rules to either list or reclassify 3 species.
- For about 80 percent of the listed species, FWS received comments during the public comment period. In most instances, FWS received five or fewer comments for each species. However, for about 11 percent of the species, FWS received more than 25 comments.
- In its final rules for 57 of the listings (25 animal and 32 plant species), FWS summarized the public comments received about the biological basis for

the proposed listing. Our analysis of the summaries indicates that the comments focused primarily on (1) the overall adequacy of the biological information used to support the listing proposal, as well as the need for additional information; (2) the evidence of a threat to the species; (3) the species' habitat—including the need to designate critical habitat; and (4) the rarity or uniqueness of the species.

- Public hearings, which generally will be held if requested, were held on proposed listings for 24 of the 226 species listed and for 1 of the 3 species for which FWS withdrew its listing proposal.
- Finally, FWS made negative 90-day findings for 23 petitions to list, delist, or reclassify animals and plants and made negative 12-month findings for 4 petitions to list or reclassify animals.

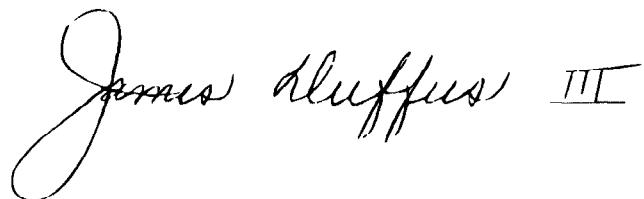
Section 1 presents background information on the listing process and our scope and methodology, and section 2 provides more detailed information about the public comments received during the public comment period that follows a proposal to list a species.

We conducted our review from February through August 1993 in accordance with generally accepted government auditing standards. We discussed the information in this briefing report with the Deputy Chief, Division of Endangered Species, and the Branch Chief, Branch of Listing and Candidate Assessment at FWS, who generally agreed with the data presented and our characterization of the biological questions raised. As your office requested, we did not obtain written comments from the Department of the Interior on a draft of this briefing report.

Unless you announce its contents earlier, we plan no further distribution of this briefing report until 15 days from the date of this letter. At that time, we will send copies to the Secretary of the Interior; the Assistant Secretary, Fish and Wildlife and Parks; and the Director of the Fish and Wildlife Service and make copies available to others upon request.

Please contact me at (202) 512-7756 if you or your staff have any questions concerning this briefing report. Major contributors to this briefing report are listed in appendix II.

Sincerely yours,

A handwritten signature in cursive ink that reads "James Duffus III". The signature is fluid and written in a single continuous line.

James Duffus III
Director, Natural Resources
Management Issues

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Abbreviations

ESA	Endangered Species Act
FWS	Fish and Wildlife Service
GAO	General Accounting Office

Background

The Congress enacted the Endangered Species Act (ESA) in 1973 to protect animal and plant species whose survival was in jeopardy. The act's ultimate goal was to restore species so that they could live in self-sustaining populations without the act's protection. Species are listed as endangered or threatened, depending on their risk of extinction. An endangered species is any species at risk of extinction in all or a significant portion of its range; a threatened species is one that is likely to become endangered in the foreseeable future in all or a significant portion of its range.

Two agencies have the primary responsibility for implementing the provisions of the ESA. The Fish and Wildlife Service (FWS) is responsible for protecting freshwater and land species. The National Marine Fisheries Service within the National Oceanic and Atmospheric Administration in the Department of Commerce is responsible for protecting most marine species.

The ESA specifies five conditions which indicate that a species is qualified for listing as an endangered or threatened species. Meeting any one or a combination of these conditions indicates that a species should be listed. The five conditions are

- the present or threatened destruction, modification, or curtailment of the species' habitat or range;
- overutilization of the species for commercial, recreational, scientific, or educational purposes;
- disease or predation;
- the inadequacy of existing regulatory mechanisms; and
- other natural or man-made factors affecting the species' continued existence.

In addition to FWS initiating a listing action, any person or organization may petition FWS to add a species to the endangered species list, delist a species, or reclassify a listed species (for example, from threatened to endangered). Within 90 days of receiving a petition, FWS is required to make a determination (called a "90-day finding") as to whether the petition presents adequate biological data to indicate that the petitioned action may be warranted. For those petitions presenting adequate biological data, FWS proceeds with a review of the species' status and must make a determination (called a "12-month finding") as to whether the petitioned action is warranted.

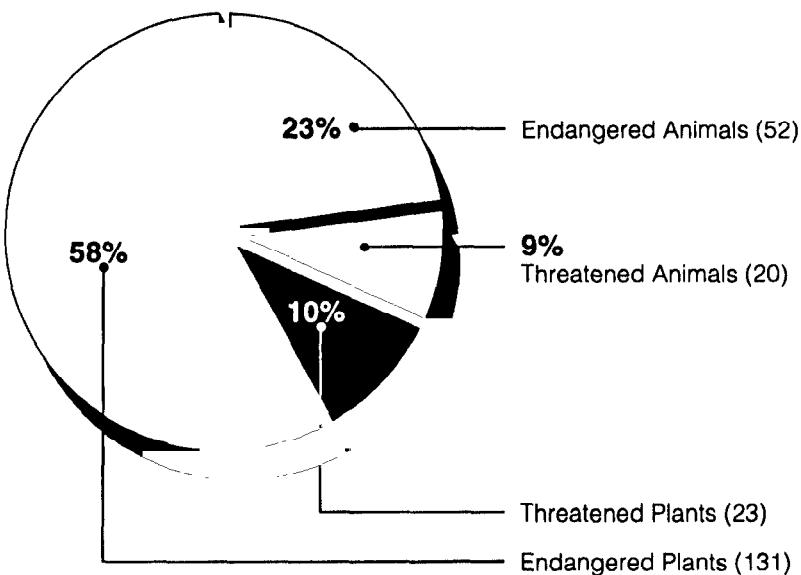
The process used to list species as threatened or endangered (listing process) begins with a proposed rule being published in the Federal Register.¹ Public comments are accepted on proposed rules for at least 60 days following their publication, and at least one public hearing will be held if any person requests one. A final rule to implement the listing action is generally required within 1 year of the publication of a proposed rule. The decision to list a species must be made solely on the basis of the best scientific and commercial data available.

Between January 1, 1989, and December 31, 1992, FWS published final rules² in the Federal Register to list 226 species (72 animals and 154 plants) that had been proposed for listing as either endangered or threatened. Figure 1.1 divides the species listed into endangered and threatened animals and plants.

¹A more detailed explanation of the major processes for protecting animals and plants under the Endangered Species Act may be found in Endangered Species Act: Types and Number of Implementing Actions (GAO/RCED-92-131BR, May 8, 1992).

²Four of these were corresponding rules, which FWS is required to publish, to list species for which the National Marine Fisheries Service had responsibility. These were for the Indus River dolphin, the Sacramento River winter-run chinook salmon, the Sockeye salmon (red, blueback), and the Steller sea lion (northern).

Figure 1.1: Final FWS Listings of Endangered and Threatened Animals and Plants



Source: GAO's presentation of FWS's data.

Scope and Methodology

As agreed with the requester's office, we limited the scope of our work to species that had been proposed for listing and had a final rule published by FWS between January 1, 1989, and December 31, 1992, to provide data on the listings made in the 4 years following amendments to the ESA in 1988. FWS officials provided us with the names of all species meeting this requirement, as well as species for which a proposed rule to list the species had been published but subsequently withdrawn. We obtained and reviewed all of the published final rules for the listed species and, for selected species, the related listing files maintained at FWS headquarters.

For the 226 animals and plants listed, thousands of public comments were received. However, for 57 proposed listings—which account for most of the public comments received—FWS published in its final rules a summary of the issues raised by commenters on the proposals to list species. We analyzed FWS's summaries to identify the nature of questions raised about the biological information supporting the proposed listings.

Public Comments on Proposed ESA Listings of Species

Volume of Public Comments

The number of public comments that FWS received in response to its proposed listing for each of 226 species varied greatly, depending on the individual species proposed for listing. The proposed listing for nearly 20 percent of these species resulted in no public comments. At the other extreme, over 11 percent of the proposed listings resulted in more than 25 public comments. Most of the proposed listings—about 59 percent—resulted in five or fewer public comments. Tables 2.1 through 2.3 provide details on the number of public comments received.

Table 2.1: Public Comments on All Proposed Listings

Number of Public comments	Number of species		
	Endangered	Threatened	Total
None	42	2	44
1-5	75	14	89
6-10	21	6	27
11-25	26	14	40
26-50	10	2	12
51-100	6	2	8
101 and over	3	3	6
Total	183	43	226

Table 2.2: Public Comments on Proposed Animal Listings

Number of Public comments	Number of animal species		
	Endangered	Threatened	Total
None	13	2	15
1-5	7	4	11
6-10	10	2	12
11-25	9	6	15
26-50	4	1	5
51-100	6	2	8
101 and over	3	3	6
Total	52	20	72

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**Table 2.3: Public Comments on
Proposed Plant Listings**

Number of Public comments	Number of plant species		
	Endangered	Threatened	Total
None	29	0	29
1-5	68	10	78
6-10	11	4	15
11-25	17	8	25
26-50	6	1	7
51-100	0	0	0
101 and over	0	0	0
Total	131	23	154

In addition to the 226 species proposed for listing and subsequently listed, FWS withdrew two proposals to list additional species and a third proposal to reclassify a species from threatened to endangered. The prairie mole cricket and Bartram's ixia (a woodland plant) were proposed for listing as threatened and endangered, respectively, and the African elephant was proposed to be reclassified from threatened to endangered. However, after receiving additional information on these species through public comments on the proposals, FWS withdrew its proposals to list or reclassify them.

The prairie mole cricket was found to be more abundant and occur in a wider range of vegetation than previously thought. The withdrawal of the Bartram's ixia was based on the plant's remaining abundant in commercial forest land and the likelihood of a state purchase of some habitat for it. Finally, on the basis of the most current data available, FWS determined that the most appropriate classification of the African elephant was that it remain listed as threatened.

Public Comments Include Biological Questions

Overall, we found that public comments on FWS's proposed listings for 57 of the 226 species included questions about the biological information supporting the listing, which FWS subsequently addressed in its final rules. The 57 species included 25 animals and 32 plants. We found that the biological questions about the 57 species related to six topics:

1. The overall adequacy of the information supporting the proposed listing or the need for additional information.
2. The danger or threat to the species.

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3. The species' habitat—including the need to designate critical habitat.
4. The rarity or uniqueness of the species.
5. The specific knowledge about the species or its habitat, such as the species' classification or status.
6. The sufficiency of the protection already provided the species.

Table 2.4 identifies the 57 species and shows which of the above six topics were the focus of questions raised in the public comments on the proposal to list the species. As shown in table 2.4, the topics on which questions were most frequently raised were the overall adequacy of the biological information supporting the listing, the danger or threat to the species, and the species' habitat.

Table 2.4: Six Topics That Were the Focus of Public Comments on the Biological Information Supporting 57 Proposed Listings

Species name	Topic*					
	1	2	3	4	5	6
Animals - 25						
Endangered - 15						
Argali	X	X				
Banbury Springs limpet	X	X	X			
Cahaba shiner			X			
Cat Island turtle				X		
Golden-cheeked (wood) warbler ²	X		X			
Idaho springsnail	X	X				
Myrtle's silverspot butterfly	X		X		X	
Ouachita rock-pocketbook (Wheeler's pearly mussel)	X		X	X	X	
Pallid sturgeon	X		X	X	X	
Razorback sucker			X		X	X
Rice (silver rice) rat			X		X	
Snake River physa snail	X	X				
Uncompahgre fritillary butterfly			X	X	X	
Utah valvata snail	X	X				
Winged mapleleaf mussel					X	

(continued)

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Species name	Topic*					
	1	2	3	4	5	6
Threatened - 10						
Aleutian Canada goose	X		X			
Arkansas fatmucket	X	X				
Bliss Rapids snail	X	X				
Desert tortoise	X	X	X	X	X	X
Inflated heelsplitter	X		X			
Louisiana black bear	X		X	X	X	
Marbled murrelet	X		X			
Neosho madtom				X		
Northern spotted owl	X	X	X	X	X	X
Squirrel Chimney cave (Florida) shrimp	X					
Plants - 32						
Endangered - 22						
Barneby reed-mustard					X	
Burke's goldfields	X	X	X			
Butte County meadowfoam	X		X			
Dwarf iliau	X	X	X			
Fringed campion				X		
Gentian pinkroot		X				X
Liliwai	X					
Little Aguja pondweed	X		X	X	X	X
Louisiana quillwort	X	X		X		
Menzies' wallflower			X			
Monterey gilia	X					
Sebastopol meadowfoam	X	X	X			
Sentry milk-vetch					X	
Sonoma sunshine (Baker's stickyseed)	X	X	X			
Terlingua Creek cat's eye	X	X			X	
Texas trailing phlox				X		X
Abutilon eremitopetalum			X		X	
Cyanea macrostegia subspecies gibsonii	X			X		
Gahnia lanaiensis			X		X	
Phyllostegia glabra variety lanaiensis	X			X		
Tetramolopium remyi	X			X		
Viola lanaiensis			X		X	
Threatened - 10						
Dudley Bluffs bladderpod	X	X	X	X	X	
Dudley Bluffs twinpod	X	X	X	X	X	

(continued)

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Public Comments on Proposed ESA Listings
of Species

Species name	Topic*					
	1	2	3	4	5	6
Clay reed-mustard	X		X			
Florida skullcap		X				
Hoover's woolly-star			X			
Leedy's roseroot	X	X				
Telephus spurge		X				
Ute ladies'-tresses	X			X		
Virginia spiraea	X		X			X
White birds-in-a-nest	X					
Number of species for which topic was raised	37	27	27	21	15	5

Former or alternative names are presented in parentheses.

*The six topics are listed on pp. 10 and 11.

Instances in Which Public Hearings Were Held

When a proposed listing is published, FWS provides an opportunity for any person to request a public hearing on the listing proposal. Public hearings were requested, or held in anticipation of a request, for 25 (about 11 percent) of the listed species. A total of 24 hearings were held—17 for proposals to list animals and 7 for plants. Of the 24 species having hearings, 21 had biological questions included in the public comments on their proposed listing and are included in table 2.4. A request for a public hearing on the proposed listing of the purple cat's paw pearlymussel was withdrawn after FWS held an informal meeting with the requester, local officials, and farmers to discuss their concerns.

Table 2.5 identifies the 24 listings that had hearings held and the number of hearings held on each proposed listing.

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Table 2.5: Public Hearings Held on 24 Listed Species

Listing	Number of hearings
Animals	
Endangered	
Banbury Springs limpet	
Bliss Rapids snail ^a	
Idaho springsnail	
Snake River Physa snail	
Utah Valvata snail	3 ^b
Cahaba shiner	1
Golden-cheeked warbler	1 ^c
Karner blue butterfly	1
Lee County cave isopod	1
Ouachita rock-pocketbook	1
Razorback sucker	1
Threatened	
Desert tortoise	3
Louisiana black bear	1
Northern spotted owl	4 ^c
Plants	
Endangered	
Burke's goldfields	
Sebastapol meadowfoam	
Sonoma sunshine	1 ^{b,c}
Butte County meadowfoam	1
Dwarf iliau	1
Leafy prairie-clover	1
Little Aguja pondweed	1
Louisiana quillwort	1
Threatened	
Dudley Bluffs bladderpod	
Dudley Bluffs twinpod	1 ^b
Total	24

Note: A public hearing was held on the proposed listing of the Bartram's Ixia plant as endangered. However, since the proposal was later withdrawn, the hearing is not included in this table.

^aThis is a threatened species but is shown here to reflect the joint hearings held.

^bJoint hearing(s).

^cHearing held by FWS in anticipation of a request for a hearing on the proposed listing.

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of Species**

FWS Denied Some Petitions to List Species

Between January 1, 1989, and December 31, 1992, FWS, in response to petitions, made negative 90-day findings on 23 animals and plants and negative 12-month findings on 4 animals. A negative 90-day finding indicates that the petition does not present adequate biological data, and a negative 12-month finding means that, while the petition presented adequate biological data, the petitioned action (list, delist, or reclassify) is not warranted. Table 2.6 presents information on the number and type of plant and animal petitions which FWS denied as a 90-day finding or found not warranted as a 12-month finding.

Table 2.6: Negative 90-Day and 12-Month Findings by FWS

Petition type	Number of negative findings by FWS	
	90-day	12-month
List		
Animals	13 ^a	2
Plants	5	0
Delist		
Animals	4	0
Plants	0	0
Reclassify		
Animals	1	2
Plants	0	0

^aFWS agreed to reconsider one petition to list which had a negative 90-day finding but reached the same conclusion upon reconsideration.

FWS's Final Animal and Plant Listings

The following list identifies the 226 species included in our review and is divided first into animals and plants, and then subdivided into endangered and threatened listings. Within each of the subdivisions, the listings are sorted alphabetically by common name. Plants lacking a common name appear at the end of the appropriate alphabetical listing of common names and are arranged in alphabetical order on the basis of their scientific name.

Table I.1: Common and Scientific Names of the 226 Species Addressed In This Briefing Report

Common name	Scientific name
Animals, endangered	
Alamosa springsnail	<i>Tryonia alamosae</i>
Argali	<i>Ovis ammon</i>
Banbury Springs limpet	<i>Lanx new (undescribed) species</i>
Brazilian (Hoge's) ^a sideneck turtle	<i>Phrynops hogei</i>
Cahaba shiner	<i>Notropis cahabae</i>
Cat Island turtle	<i>Trachemys terrapen</i>
Cheer pheasant	<i>Catreus wallichii</i>
Chimpanzee	<i>Pan troglodytes</i>
Cracking pearly mussel	<i>Hemistena (Lastena) lata</i>
Cumberland pigtoe mussel	<i>Pleurobema gibberum</i>
Dwarf wedge mussel	<i>Alasmidonta heterodon</i>
Fanshell	<i>Cyprogenia stegaria (irrorata)</i>
Florida salt marsh vole	<i>Microtus pennsylvanicus dukecampbelli</i>
Golden-cheeked (wood) warbler	<i>Dendroica chrysoparia</i>
Guizhou snub-nosed monkey (langur)	<i>Rhinopithecus (Pygathrix) brelichi</i>
Idaho springsnail	<i>Fonticella idahoensis</i>
Inagua Island turtle	<i>Trachemys stejnegeri malonei</i>
Indus River dolphin	<i>Platanista minor</i>
Kanab ambersnail	<i>Oxyloma haydeni kanabensis</i>
Karner blue butterfly	<i>Lycaeides melissa samuelis</i>
Lee County cave isopod	<i>Lirceus usdagalun</i>
Lower Keys rabbit	<i>Sylvilagus palustris hefneri</i>
Madagascar red owl	<i>Tyto soumagnei</i>
Maria Island ground lizard	<i>Cnemidophorus vanzoi</i>
Maria Island snake	<i>Liopholis ornatus</i>
Mitchell's satyr butterfly	<i>Neonympha mitchellii mitchellii</i>
Myrtle's silverspot butterfly	<i>Speyeria zerene myrtleae</i>
Northern bald ibis	<i>Geronticus eremita</i>

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Appendix I
FWS's Final Animal and Plant Listings

Common name	Scientific name
Norfolk Island parakeet	<i>Cyanoramphus novaeseelandiae cookii</i>
Ouachita rock-pocketbook (Wheeler's pearly mussel)	<i>Arkansas (Arcidens) wheeleri</i>
Pallid sturgeon	<i>Scaphirhynchus albus</i>
Point Arena mountain beaver	<i>Aplodontia rufa nigra</i>
Purple cat's paw pearly mussel	<i>Epioblasma (Dysnomia) obliquata obliquata (Epioblasma sulcata sulcata)</i>
Pygmy chimpanzee	<i>Pan paniscus</i>
Queen Alexandra's birdwing butterfly	<i>Troides (Ornithoptera) alexandrinae</i>
Razorback sucker	<i>Xyrauchen texanus</i>
Red-tailed parrot	<i>Amazona brasiliensis</i>
Rice (silver rice) rat	<i>Oryzomys palustris natator (Oryzomys argentatus)</i>
Ring pink (golf stick pearly) mussel	<i>Obovaria retusa</i>
Sichuan snub-nosed monkey (langur)	<i>Rhinopithecus (Pygathrix) roxellana</i>
Snake River physa snail	<i>Physa natricina</i>
Sockeye (red, blueback) salmon	<i>Oncorhynchus nerka</i>
Socorro springsnail	<i>Pyrqulopsis neomexicana</i>
South American red-lined turtle	<i>Trachemys scripta callirostris</i>
Tonkin snub-nosed monkey (langur)	<i>Rhinopithecus (Pygathrix) avunculus</i>
Tulotoma (Alabama live-bearing) snail	<i>Tulotoma magnifica</i>
Utah valvata snail	<i>Valvata utahensis</i>
Uncompahgre fritillary butterfly	<i>Boloria acrocnema</i>
White-necked crow	<i>Corvus leucognaphalus</i>
White-winged guan	<i>Penelope albipennis</i>
Winged mapleleaf mussel	<i>Quandrula fragosa</i>
Yunnan snub-nosed monkey (langur)	<i>Rhinopithecus (Pygathrix) bieti</i>

Animals, threatened

Aleutian Canada goose	<i>Branta canadensis leucopareia</i>
Arkansas fatmucket	<i>Lampsilis powelli</i>
Bliss Rapids snail	Family Hydrobiidae new (undescribed) species
Blue shiner	<i>Cyprinella (Notropis) caerulea</i>
Desert tortoise	<i>Gopherus (Xerobates, Scaptochelys) agassizii</i>
Goldline darter	<i>Percina aurolineata</i>
Gulf sturgeon	<i>Acipenser oxyrinchus desotoi</i>
Inflated heelsplitter	<i>Potamilus inflatus</i>
Louisiana black bear	<i>Ursus americanus luteolus</i>
Marbled murrelet	<i>Brachyramphus marmoratus marmoratus</i>
Mountain lion	<i>Felis concolor (all subspecies except coryi)</i>
Neosho madtom	<i>Notorus placidus</i>

(continued)

Appendix I
FWS's Final Animal and Plant Listings

Common name	Scientific name
Northeastern beach tiger beetle	<i>Cicindela dorsalis dorsalis</i>
Northern spotted owl	<i>Strix occidentalis caurina</i>
Puritan tiger beetle	<i>Cicindela puritana</i>
Pygmy sculpin	<i>Cottus pygmaeus</i>
Sacramento River winter-run chinook salmon	<i>Oncorhynchus tshawytscha</i>
Steller (northern) sea-lion	<i>Eumetopias jubatus</i>
Squirrel Chimney (Florida) cave shrimp	<i>Palaemonetes cummingi</i>
Yellow-blotched map (sawback) turtle	<i>Graptemys flavimaculata</i>
Plants, endangered	
'Akoko	<i>Chamaesyce celastroides variety kaenana</i>
'Akoko	<i>Chamaesyce kuwaleana</i>
Alani	<i>Melicope mucronulata</i>
Alani	<i>Melicope reflexa</i>
American chaffseed	<i>Schwalbea americana</i>
Aupaka	<i>Isodendrion hosakae</i>
'Awikiwiki	<i>Canavalia molokaiensis</i>
'Awiwi	<i>Centaurium sebaeoides</i>
Bakersfield cactus	<i>Opuntia treleasei</i>
Barneby reed-mustard	<i>Schoenocrambe barnebyi</i>
Barneby ridge-cress (pepper cress)	<i>Lepidium barnebyanum</i>
Beach layia	<i>Layia carnosa</i>
Burke's goldfields	<i>Lasthenia burkei</i>
Butte County meadowfoam	<i>Limnanthes floccosa subspecies californica</i>
California jewelflower	<i>Caulanthus californicus</i>
Capa rosa	<i>Callicarpa ampla</i>
Clover lupine	<i>Lupinus tidestromii</i>
Dwarf liliu	<i>Wilkesia hobdyi</i>
Fringed campion	<i>Silene polypetala</i>
Gentian pinkroot	<i>Spigelia gentianoides</i>
Guthrie's ground-plum	<i>Astragalus bibullatus</i>
Haha	<i>Cyanea lobata</i>
Haha	<i>Cyanea mannii</i>
Haha	<i>Cyanea mceldowneyi</i>
Haha	<i>Cyanea pinnatifida</i>
Haha	<i>Cyanea procera</i>
Ha'iwale	<i>Cyrtandra munroi</i>
Hawaiian bluegrass	<i>Poa sandvicensis</i>
Hawaiian red-flowered geranium	<i>Geranium arboreum</i>

(continued)

Appendix I
FWS's Final Animal and Plant Listings

Common name	Scientific name
Howell's spineflower	<i>Chorizanthe howellii</i>
'Ihi'ihi	<i>Marsilea villosa</i>
Kamakahala	<i>Labordia lydgatea</i>
Kern mallow	<i>Eremalche kernensis</i>
Kio'ele	<i>Hedyotis coriacea</i>
Koki'o ke'oke'o	<i>Hibiscus arnottianus</i> subspecies <i>immaculatus</i>
Ko'oko'olau	<i>Bidens micrantha</i> subspecies <i>kalealaha</i>
Ko'oko'olau	<i>Bidens wiebkei</i>
Kulu'i	<i>Nototrichium humile</i>
Leafy prairie-clover	<i>Dalea foliosa</i> (<i>Petalostemum foliosum</i>)
Liliwai	<i>Acaena exigua</i>
Little Aguja pondweed	<i>Potamogeton clystocarpus</i>
Louisiana quillwort	<i>Isoetes louisianensis</i>
Loulu	<i>Pritchardia munroi</i>
Mahoe	<i>Alectryon macrococcus</i>
Ma'o'oli'oli	<i>Schiedea apokremnos</i>
Maui remya	<i>Remya mauiensis</i>
Menzies' wallflower	<i>Erysimum menziesii</i>
Michaux's sumac	<i>Rhus michauxii</i>
Michigan monkey-flower	<i>Mimulus glabratus</i> variety <i>michiganensis</i>
Monterey gilia	<i>Gilia tenuiflora</i> subspecies <i>arenaria</i>
Morefield's leather flower	<i>Clematis morefieldii</i>
Na'enae	<i>Dubautia herbstobatae</i>
Na Pali beach hedyotis	<i>Hedyotis st.-johnii</i>
Nehe	<i>Lipochaeta kamolensis</i>
Nehe	<i>Lipochaeta lobata</i> variety <i>leptophylla</i>
Nehe	<i>Lipochaeta tenuifolia</i>
Nohoahu	<i>Geranium multiflorum</i>
Northeastern (barbed bristle) bulrush	<i>Scirpus ancistrochaetus</i>
'Oha wai	<i>Clermontia oblongifolia</i> subspecies <i>brevipes</i>
'Oha wai	<i>Clermontia oblongifolia</i> subspecies <i>mauiensis</i>
Opuhe	<i>Urera kaalae</i>
Palo colorado	<i>Ternstroemia luquillensis</i>
Palo de jazmin	<i>Styrax portoricensis</i>
Palo de rosa	<i>Ottoschulzia rhodoxylon</i>
Pamakani	<i>Viola chamissoniana</i> subspecies <i>chamissoniana</i>
Pelos del diablo	<i>Aristida portoricensis</i>
Pilo	<i>Hedyotis mannii</i>
Pua 'ala	<i>Brighamia rockii</i>

(continued)

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Common name	Scientific name
Roan Mountain bluet	<i>Hedyotis purpurea</i> variety <i>montana</i>
San Joaquin wooly-threads	<i>Lembertia congdonii</i>
Schweinitz's sunflower	<i>Helianthus schweinitzii</i>
Sebastopol meadowfoam	<i>Limnanthes vinculans</i>
Sentry milk-vetch	<i>Astragalus cremnophylax</i> variety <i>cremnophylax</i>
Small-anthered bittercress	<i>Cardamine micranthera</i>
Smooth coneflower	<i>Echinacea laevigata</i>
Sonoma spineflower	<i>Chorizanthe valida</i>
Sonoma sunshine (Baker's stickyseed)	<i>Blennosperma bakeri</i>
Spreading avens	<i>Geum radiatum</i>
Tennessee yellow-eyed grass	<i>Xyris tennesseensis</i>
Terlingua Creek cat's eye	<i>Cryptantha crassipes</i>
Texas trailing phlox	<i>Phlox nivalis</i> subspecies <i>texensis</i>
Walker's manioc	<i>Manihot walkerae</i>
Wawa'iole	<i>Huperzia mannii</i>
White irisette	<i>Sisyrinchium dichotomum</i>

Endangered plants with no common names

<i>Abutilon eremitopetalum</i>
<i>Abutilon sandwicense</i>
<i>Alsinidendron obovatum</i>
<i>Alsinidendron trinerve</i>
<i>Cassia mirabilis</i>
<i>Chamaesyce halemanui</i>
<i>Cranichis ricartii</i>
<i>Cyanea macrostegia</i> subspecies <i>gibsonii</i>
<i>Cyanea superba</i>
<i>Cyanea undulata</i>
<i>Diellia falcata</i>
<i>Dubautia latifolia</i>
<i>Dubautia pauciflorula</i>
<i>Gahnia lanaiensis</i>
<i>Gouania meyenii</i>
<i>Hedyotis degeneri</i>
<i>Hedyotis parvula</i>
<i>Hesperomannia arbuscula</i>
<i>Hesperomannia lydgatei</i>
<i>Ilex sintenisii</i>
<i>Lepanthes eltoensis</i>

(continued)

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FWS's Final Animal and Plant Listings

Common name	Scientific name
	<i>Lobelia niihauensis</i>
	<i>Lysimachia lydgatei</i>
	<i>Neraudia angulata</i>
	<i>Phyllostegia glabra</i> variety <i>lanaiensis</i>
	<i>Phyllostegia mannii</i>
	<i>Phyllostegia mollis</i>
	<i>Poa siphonoglossa</i>
	<i>Remya kauaiensis</i>
	<i>Remya montgomeryi</i>
	<i>Sanicula mariversa</i>
	<i>Schiedea haleakalensis</i>
	<i>Schiedea kaalae</i>
	<i>Schiedea lydgatei</i>
	<i>Silene alexandri</i>
	<i>Silene lanceolata</i>
	<i>Silene perlmanii</i>
	<i>Stenogyne bifida</i>
	<i>Stenogyne campanulata</i>
	<i>Stenogyne kanehoana</i>
	<i>Ternstroemia subsessilis</i>
	<i>Tetramolopium filiforme</i>
	<i>Tetramolopium lepidotum</i> variety <i>lepidotum</i>
	<i>Tetramolopium remyi</i>
	<i>Viola helenae</i>
	<i>Viola lanaiensis</i>
	<i>Xylosma crenatum</i>

Plants, threatened

'Ahinahina (Haleakala silversword)	<i>Argyroxiphium sanwicense</i> subspecies <i>macrocephalum</i>
Alabama streak-sorus fern	<i>Thelypteris pilosa</i> variety <i>alabamensis</i> (<i>Leptogramma pilosa</i> variety <i>alabamensis</i>)
Clay reed-mustard	<i>Schoenocrambe argillacea</i>
Cobana negra	<i>Stahlia monosperma</i>
Cumberland rosemary	<i>Conradina verticillata</i>
Dudley Bluffs bladderpod	<i>Lesquerella congesta</i>
Dudley Bluffs twinpod	<i>Physaria obcordata</i>
Florida skullcap	<i>Scutellaria floridana</i>
Higa chumbo	<i>Harrisia (Cereus) portoricensis</i>
Hoover's woolly-star	<i>Eriastrum hooveri</i>

(continued)

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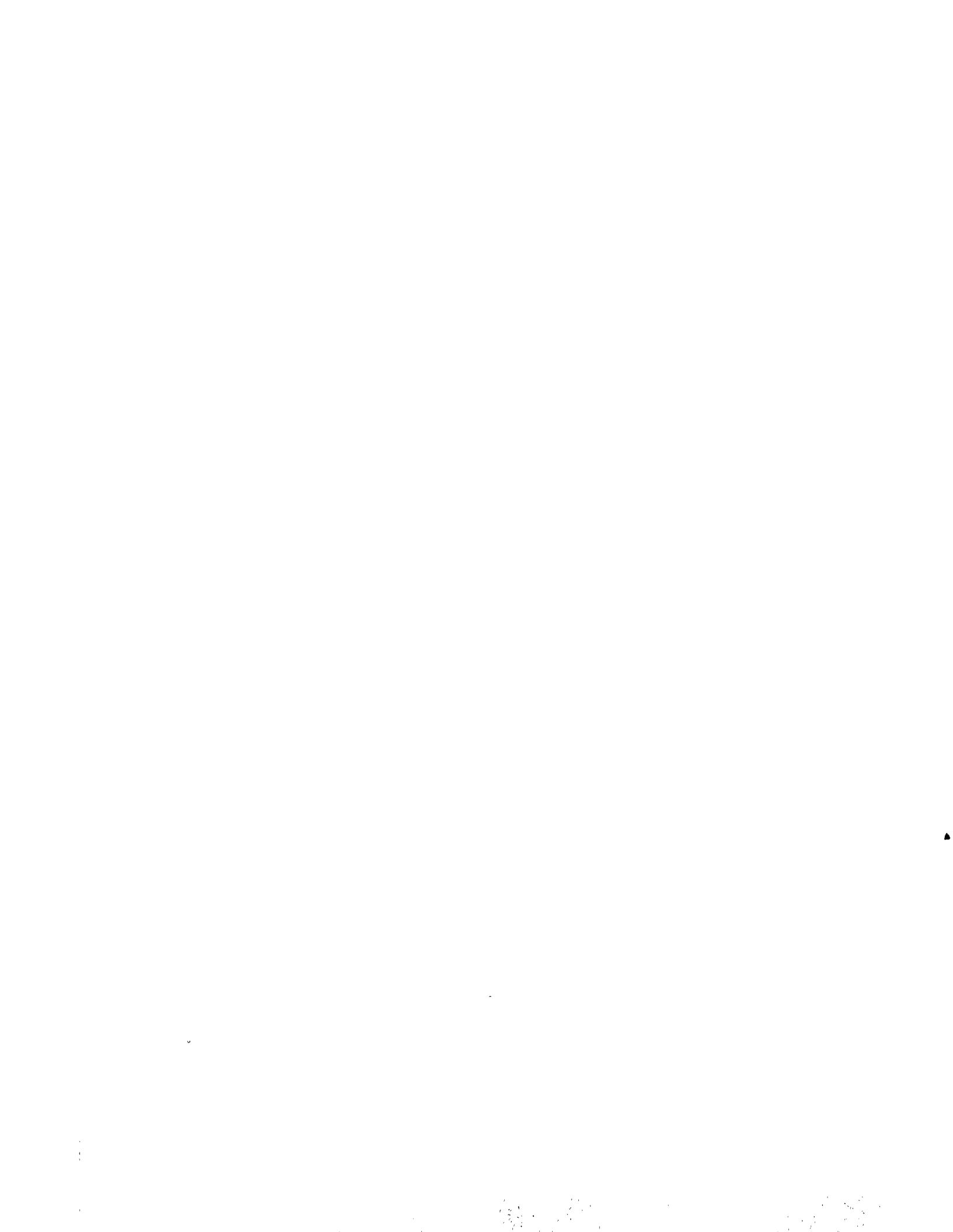
Common name	Scientific name
Knieskern's beaked-rush	<i>Rhynchospora knieskernii</i>
Kral's water-plantain	<i>Sagittaria secundifolia</i>
Leedy's roseroot	<i>Sedum integrifolium subspecies leedyi</i>
Lyrate bladder-pod	<i>Lesquerella lyrata</i>
Palma de manaca	<i>Calyptromoma rivalis</i>
Price's potato-bean	<i>Apios priceana</i>
Sensitive joint-vetch	<i>Aeschynomene virginica</i>
Telephus spurge	<i>Euphorbia telephiooides</i>
Ute ladies'-tresses	<i>Spiranthes diluvialis</i>
Virginia spiraea	<i>Spiraea virginiana</i>
White birds-in-a-nest	<i>Macbridea alba</i>
Threatened plants with no common names	
	<i>Schoepfia arenaria</i>
	<i>Tetramolopium rockii</i>

^aFormer or alternative names are presented in parentheses.

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