

Pub. L. 100-17 and sec. 1048, Pub. L. 102-240; 49 CFR 1.51.

2. Section 661.11 is amended by adding Appendices A, B and C to read as follows:

§ 661.11 Rolling stock procurements.

* * * * *

Appendix A to § 661.11—General Waivers

(a) The provisions of § 661.11 of this part do not apply when foreign sourced spare parts for buses and other rolling stock (including train control, communication, and traction power equipment) whose total cost is 10 percent or less of the overall project contract cost are being procured as part of the same contract for the major capital item.

(b) [Reserved]

Appendix B to § 661.11—Typical Components of Buses

The following is a list of items that typically would be considered components of a bus. This list is not all-inclusive.

Engines, transmissions, front axle assemblies, rear axle assemblies, drive shaft assemblies, front suspension assemblies, rear suspension assemblies, air compressor and pneumatic systems, generator/alternator and electrical systems, steering system assemblies, front and rear air brake assemblies, air conditioning compressor assemblies, air conditioning evaporator/condenser assemblies, heating systems, passenger seats, driver's seat assemblies, window assemblies, entrance and exit door assemblies, door control systems, destination sign assemblies, interior lighting assemblies, front and rear end cap assemblies, front and rear bumper assemblies, specialty steel (structural steel tubing, etc.) aluminum extrusions, aluminum, steel or fiberglass exterior panels, and interior trim, flooring, and floor coverings.

Appendix C to § 661.11—Typical Components of Rail Rolling Stock

The following is a list of items that typically would be considered components of rail rolling stock. This list is not all inclusive.

Car shells, main transformer, pantographs, traction motors, propulsion gear boxes, interior linings, acceleration and braking resistors, propulsion controls, low voltage auxiliary power supplies, air conditioning equipment, air brake compressors, brake controls, foundation brake equipment, articulation assemblies, train control systems, window assemblies, communication equipment, lighting, seating, doors, door actuators, and controls, couplers and draft gear, trucks, journal bearings, axles, diagnostic equipment, and third rail pick-up equipment.

Issued On: July 25, 1997.

Gordon J. Linton,

Administrator.

[FR Doc. 97-20109 Filed 7-30-97; 8:45 am]

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018-AD39

Endangered and Threatened Wildlife and Plants; Final Rule for 13 Plant Taxa From the Northern Channel Islands, California

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The U.S. Fish and Wildlife Service (Service) determines endangered status for *Arabis hoffmannii* (Hoffmann's rock-cress), *Arctostaphylos confertiflora* (Santa Rosa Island manzanita), *Berberis pinnata* ssp. *insularis* (island barberry), *Castilleja mollis* (soft-leaved paintbrush), *Galium buxifolium* (island bedstraw), *Gilia tenuiflora* ssp. *hoffmannii* (Hoffmann's slender-flowered gilia), *Malacothamnus fasciculatus* ssp. *nesioticus* (Santa Cruz Island bushmallow), *Malacothrix indecora* (Santa Cruz Island malacothrix), *Malacothrix squalida* (island malacothrix), *Phacelia insularis* ssp. *insularis* (island phacelia), and *Thysanocarpus conchuliferus* (Santa Cruz Island fringepod) and threatened status for *Dudleya nesiotica* (Santa Cruz Island dudleya) and *Helianthemum greenei* (island rush-rose) pursuant to the Endangered Species Act of 1973, as amended (Act). The 13 plant taxa from the northern Channel Islands, California and their habitats have been variously affected or are currently threatened by one or more of the following: soil loss; habitat alteration by mammals alien to the Channel Islands (pigs, goats, sheep, donkeys, cattle, deer, elk, bison); direct predation by these same alien mammals; habitat alteration by native seabirds; habitat alteration due to vehicular traffic; overcollection for scientific or recreational purposes; competition with alien plant taxa; reduced genetic viability; depressed reproductive vigor; and the chance of random extinction resulting from small numbers of individuals and populations. A notice of withdrawal of the proposal to list *Dudleya blochmaniae* ssp. *insularis* (Santa Rosa Island dudleya), *Dudleya* sp. nov. "East Point" (munchkin dudleya), and *Heuchera maxima* (Island

alum-root) which were proposed (July 25, 1995, 60 FR 37993) for listing along with the 13 taxa considered in this rule, is published concurrently with this final rule.

DATES: This rule becomes effective September 2, 1997.

ADDRESSES: The complete file for this rule is available for inspection by appointment during normal business hours at the Ventura Field Office, U.S. Fish and Wildlife Service, 2493 Portola Road, Suite B, Ventura, California 93003.

FOR FURTHER INFORMATION CONTACT: Tim Thomas or Connie Rutherford, Botanists, Ventura Field Office (see **ADDRESSES** section) (telephone number 805/644-1766; facsimile 805/644-3958).

SUPPLEMENTARY INFORMATION:

Background

Arabis hoffmannii (Hoffmann's rock-cress), *Arctostaphylos confertiflora* (Santa Rosa Island manzanita), *Berberis pinnata* ssp. *insularis* (island barberry), *Castilleja mollis* (soft-leaved paintbrush), *Dudleya nesiotica* (Santa Cruz Island dudleya), *Galium buxifolium* (island bedstraw), *Gilia tenuiflora* ssp. *hoffmannii* (Hoffmann's slender-flowered gilia), *Helianthemum greenei* (island rush-rose), *Malacothamnus fasciculatus* ssp. *nesioticus* (Santa Cruz Island bushmallow), *Malacothrix indecora* (island malacothrix), *Malacothrix squalida* (Santa Cruz Island malacothrix), *Phacelia insularis* ssp. *insularis* (island phacelia), and *Thysanocarpus conchuliferus* (Santa Cruz Island fringepod) are California Channel Island endemics. The only species in this group that is not restricted to the four northern islands (Anacapa, Santa Cruz, Santa Rosa, and San Miguel) is the island rush-rose, with one population known from Santa Catalina Island.

Located offshore and south of Santa Barbara County, the four northern islands are the highest points on a 130 kilometer (km) (80 mile (mi)) long seamount (Dibblee 1982). They are included within the boundaries of the Channel Islands National Park (CINP). Anacapa Island is the smallest of the four northern islands and includes three smaller islands referred to as East, Middle, and West Anacapa, that total 2.9 square (sq) km (1.1 sq mi); it is the closest island to the mainland at a distance of 20 km (13 mi). East and Middle Anacapa islands are flat-topped, wave-cut terraces largely surrounded by steep cliffs. West Anacapa is the highest of the three, reaching 283 meters (m) (930 feet (ft)) above sea level. Santa Cruz

Island is the largest of the California Channel Islands at 249 sq km (96 sq mi) with the highest point being 753 m (2,470 ft) above sea level. Santa Rosa Island is 217 sq km (84 sq mi) in area and 475 m (1,560 ft) at its highest point. San Miguel Island, the westernmost of the northern group, is 37 sq km (14 sq mi) in area and 253 m (830 ft) in height. Santa Catalina Island, on which one population of *Helianthemum greenei* occurs, lies about 113 km (70 mi) to the southeast of the northern island group; it is 194 sq km (75 sq mi) in area and its highest elevation is 648 m (2,125 ft) (Power 1980).

The northern Channel Islands are managed primarily by Federal agencies. Anacapa Island is managed by the National Park Service (NPS) with an inholding for the U.S. Coast Guard lighthouse. The western 90 percent of Santa Cruz Island is privately owned and managed by The Nature Conservancy (TNC). The remaining 10 percent of the island is Federal land managed by the NPS. Santa Rosa Island is managed by the NPS. San Miguel Island is under the jurisdiction of the U.S. Department of the Navy (Navy), but the NPS has operational jurisdiction through a Memorandum of Agreement. Except for the City of Avalon, Santa Catalina Island is privately owned and managed by the Catalina Island Conservancy.

Anacapa was set aside (with Santa Barbara Island to the south) as a National Monument in 1938. In 1980, the U.S. Congress abolished the National Monument and incorporated its lands, waters and interests into National Park status, adding Santa Cruz Island and Santa Rosa Island (at that time privately owned) within the boundaries. The NPS acquisition of Santa Rosa Island in 1986 was accomplished by outright fee purchase from the Vail and Vickers Ranching Company. A cattle ranching operation and a subleased commercial deer and elk hunting operation on Santa Rosa Island are operating under 5-year renewable special use permits, renewable until the year 2011.

TNC acquired an easement for 4,800 hectares (ha) (12,000 acres (ac)) of Santa Cruz Island in 1978 and took ownership of nine-tenths of the island in 1987. TNC's general goals for preserve management include the preservation, protection, restoration, and understanding of the natural resources (Rob Klinger, TNC, Santa Cruz Island, pers. comm. 1994). Although a specific management plan for the Santa Cruz Island Preserve has not been developed, TNC has developed a strategic direction that will focus on managing feral pigs

(*Sus scrofa*), fennel (*Foeniculum vulgare*), and fire. These activities include long-term monitoring of specific plant communities and rare plant populations; trial programs in feral pig removal, herbicide treatment of alien plant species, controlled burns in grassland and island pine communities; and research on specific species and the response of plant communities to removal of non-native mammals. A 5-year trial feral pig removal program was successful in removing all but a few pigs from a 2,400-ha (6,000-ac) enclosure on the south side of the island. The number of pigs fluctuates depending on precipitation and acorn crop. TNC also took immediate steps to remove cattle (*Bos taurus*) and sheep (*Ovis domesticus*) upon acquiring the property, but has been unable to manage the rapid spread of the alien plant, fennel, that resulted from the release of grazing pressure. TNC is exploring options for implementing island-wide feral pig removal and other management activities; these options may include developing an agreement with NPS for that agency to manage the island. Pig numbers are increasing on Santa Cruz Island (E. Painter *in litt.* 1997).

Subsequent to the relocation by missionaries of the native Chumash Indian populations from the islands to the mainland by 1814 (Hobbs 1983), land use practices on the islands focused on the introduction of a variety of livestock including sheep, goats (*Capra hircus*), cattle, pigs, burros (*Equus asinus*), and horses (*E. caballus*). Other alien mammal species were also introduced, including deer (*Odocoileus hemionus*), elk (*Cervus canadensis roosevelti*), bison (*Bison bison*), rabbits (*Oryctolagus cuniculus*), wild turkey (*Melegris gallopavo*), California quail (*Callipepla californica*), and chukar (*Alectoris chukar*) for ranching and hunting purposes (Hochberg *et al.* 1980a, Minnich 1980, Jones *et al.* 1989).

The introduction of alien herbivores to the islands has had catastrophic effects on island vegetation. Pigs had been released on Santa Cruz Island by 1854 (Hobbs 1983). Records for Santa Cruz Island indicate that sheep had been introduced in the early 1830's; by 1875, sheep stocking was around 50,000 head (Hobbs 1983). In 1890, perhaps as many as 100,000 sheep grazed on Santa Cruz Island (Hochberg *et al.* 1980a). Droughts, exacerbated by overgrazing, occurred in 1864, 1870-72, 1877, 1893-1904, 1923-24, 1935, 1946-48, 1964, (Dunkle 1950, Johnson 1980) and most recently 1986-91 (Halvorson 1993). These episodes resulted in losses of livestock and other herbivores due to starvation (Johnson 1980, Sauer 1988).

Manipulation of the vegetation by over 150 years of intensive grazing and browsing has resulted in the replacement of native plant communities with non-native grasslands (Minnich 1980, Hobbs 1983).

Several alien weedy plants have invaded the disturbed habitats of the islands. One of the most obvious problem species is fennel on Santa Cruz Island. Fennel and other aggressive non-native weed species displace native species and further threaten the ecological integrity of the island ecosystems (Smith 1989, Simberloff 1990). Research methods and results to date for the control of fennel were the topics of several presentations at the fourth Channel Islands symposium (Brenton and Klinger 1994, Dash and Gliessman 1994, Gliessman 1994).

Some progress has been made toward eliminating alien animals from the islands. TNC has eliminated the cattle and sheep from the western portion of Santa Cruz Island, and continues to prevent sheep from invading from the eastern portion of the island (Kelley 1997). The NPS purchased the east end of the Santa Cruz Island in February 1997 and initiated a sheep control program. The NPS has removed all the pigs from Santa Rosa Island. A program to control goats and pigs is being implemented on western Santa Catalina Island. However, no action has been taken to eliminate deer and elk from Santa Rosa Island, or pigs from the majority of Santa Cruz Island, or bison which have been introduced to Santa Catalina Island.

The floristics of the islands are composed of elements that have a variety of origins, and include relict populations of formerly wider-ranging species such as the endemic island ironwoods (*Lyonothamnus floribundus*) and disjunct species such as the Torrey pine (*Pinus torreyana*). Such species typically occur in canyons and on slopes with more moderate environments than those that prevail in surrounding areas. Island endemics, including all of the species in this final rule, have been discussed by Raven (1967), Philbrick (1980), and Wallace (1985). Fifty-four island endemic plant species are known from the northern Channel Islands; 15 species are single island endemics (Halvorson *et al.* 1987). Some of the most striking examples of extinction have occurred from islands around the world; from the Channel Islands, notable extinctions include the Santa Barbara Island song sparrow (*Melospiza melodia cooperi*) and Santa Cruz Island monkeyflower (*Mimulus brandegei*). Nine plant species have been extirpated from various islands

within the northern island group: three from Santa Cruz (*Malacothrix incana*, *Mimulus brandegei*, and *Sibara filifolia*), two from Santa Rosa (*Berberis pinnata* ssp. *insularis*, and *Helianthemum greenii*), and four from San Miguel (*Grindelia latifolia*, *Ceanothus megacarpus* ssp. *insularis*, *Rhamnus pirifolia*, and *Ericameria ericoides*) (Philbrick 1980, Halvorson *et al.* 1987, Clark *et al.* 1990).

The main habitat types on the islands include coastal dune, coastal bluff, coastal sage scrub, grasslands, chaparral, oak and ironwood woodlands, riparian woodlands, and conifer forest; various subdivisions of these types have been described by Dunkle (1950), Philbrick and Haller (1977), Minnich (1980), Clark *et al.* (1990), and Coonan *et al.* (1996). Coastal beach and associated dune habitats occur in the windiest sandy locations on the three westernmost islands. These coastal habitats appear to be relatively undisturbed compared to mainland sites where development and recreation have largely eliminated them. Coastal bluff habitat has provided a refugium for many plants from grazing by non-native animals (Minnich 1980, Halvorson *et al.* 1992).

The upland habitats were formerly mostly shrub-dominated and included coastal sage scrub and chaparral habitats. Historic reports indicate that these brushlands were impenetrable (Hochberg *et al.* 1980a). Historical photographs reveal a significant loss of woody vegetation from the islands during the last 100 years (Hobbs 1980, Minnich 1980). Coastal sage habitat is composed of soft-leaved, soft-stemmed plants that are easily broken by trampling and palatable to both browsers and grazers. The original coastal sage scrub habitat has been reduced by overgrazing to the extent that it persists only in locations inaccessible to grazing and browsing animals, such as bluffs and marginal habitat in patches of cactus (Minnich 1980, Hobbs 1983, Painter *in litt.* 1997). Coastal sage scrub habitat has increased in importance on Anacapa and San Miguel Islands where grazing has been removed (Johnson 1980).

The structure of the remnant chaparral habitats has also been modified by grazing and browsing, such

that shrubs form arborescent (treelike) shapes or extremely low, prostrate forms. Continued browsing by deer and elk on Santa Rosa Island has created an open 'skeleton' community reticulated by game trails that provide access to nearly 100 percent of the habitat (Hochberg *et al.* 1980a; Tim Thomas, U.S. Fish and Wildlife Service (USFWS), pers. obs., 1993).

Grasslands are largely composed of non-native annual species and have greatly expanded at the expense of most other habitat types (Hobbs 1983, Cole and Liu 1994). The pre-grazing importance of cactus in the island communities will never be known. Overgrazing has resulted in the spread of cactus to areas denuded by livestock. Overgrazing on Santa Cruz Island facilitated the spread of cactus to the point that over 40 percent of the rangeland was rendered useless (Hochberg *et al.* 1980a). Cactus habitats on Santa Cruz and Santa Rosa Islands have been dramatically reduced to improve cattle operations by the introduction of biological controls (Hochberg *et al.* 1980a).

Island woodlands are dominated by unique endemic species and have also been heavily affected by grazing, browsing, and rooting animals seeking summer shelter and food (Clark *et al.* 1990, Halvorson 1993). Riparian woodlands are heavily modified physically and structurally, and in some areas they have been completely eliminated (Hochberg *et al.* 1980a, Minnich 1980). Normally, a canyon with year-round water will have well-developed riparian vegetation that includes willows (*Salix* spp.), sycamores (*Platanus racemosa*), cottonwoods (*Populus* spp.) and oaks (*Quercus* spp.). This vegetation would typically support a rich diversity of organisms, especially neo-tropical migratory bird species, but years of overutilization by introduced mammals have considerably reduced this formerly resource-rich habitat.

The bishop pine forests that are protected from grazing have well-developed foliar cover and pine reproduction (Hobbs 1978). In contrast, Clark *et al.* (1990) reported that bishop pine forests that are subjected to grazing lack the protective nutrient layer of

ground litter and exhibit no reproduction.

Pigs, cattle, deer, elk, goats, sheep, and bison continue to threaten and further degrade whole ecosystems on the islands (Sauer 1988, Halvorson 1993). Many of the taxa in this rule survive only in areas that are inaccessible to the alien ungulates and then only on sites that are marginally suitable making their persistence tenuous (Painter *in litt.* 1997).

Discussion of the Taxa Included in This Rule

The current and historic distribution of the taxa included in this rule are shown in Table 1. Seven of these taxa are known only from one island, although two of these have been extirpated from other islands on which they occurred historically. The remaining six taxa currently occur on only two islands, although two of these six have been extirpated from a third island from which they were known historically. All but 3 of the 13 taxa are known from five or fewer populations.

Arabis hoffmannii (Hoffmann's rock-cress) was described by Philip Alexander Munz as *Arabis maxima* var. *hoffmannii* in 1932 based on specimens collected by Ralph Hoffmann at the "sea cliffs east of Dick's Harbor," now known as Platts Harbor, on Santa Cruz Island in 1932 (Rollins 1936). T.S. Brandegee had collected this rock-cress as early as 1888 from an unspecified location on Santa Cruz Island. In 1936, Reed Clark Rollins elevated the taxon to species status by publishing the name *Arabis hoffmannii*. This nomenclature was retained in the most recent treatment of the genus (Rollins 1993).

Arabis hoffmannii is a slender, herbaceous, monocarpic (flowering once then dying) perennial in the mustard (Brassicaceae) family. The one to several stems reach 0.6 m (2.0 ft) high, and have slightly toothed basal leaves. The white to lavender flowers, comprised of four petals 1 centimeter (cm) (0.4 inch (in)) long, are found at the tips of the stems. The slightly curved fruits are borne on long stalks (siliques). The only other rock-cress that occurs on the islands, *Arabis glabra* var. *glabra*, is a taller plant with cream-colored flowers.

TABLE 1

Scientific name	Growth form	Number of populations	Distribution					
			mA	wA	CR	RO	MI	CA
<i>Arabis hoffmannii</i>	Perennial	4		h	x	x		
<i>Arctostaphylos confertiflora</i>	Shrub	<10				x		
<i>Berberis pinnata</i> ssp. <i>insularis</i>	Shrub or vine	3		h	x	h		

TABLE 1—Continued

Scientific name	Growth form	Number of populations	Distribution					
			mA	wA	CR	RO	MI	CA
<i>Castilleja mollis</i>	Perennial	2				x	h	
<i>Dudleya nesiotica</i>	Succulent	1			x			
<i>Galium buxifolium</i>	Sub-shrub	10			x		x	
<i>Gilia tenuiflora</i> ssp. <i>hoffmannii</i>	Annual	3				x		
<i>Helianthemum greenei</i>	Sub-shrub	14			x	h		x
<i>Malacothamnus fasciculatus</i> ssp. <i>nesioticus</i> .	Shrub	2			x			
<i>Malacothrix indecora</i>	Annual	2			x	x	h	
<i>Malacothrix squalida</i>	Annual	(3)	x		x		x	
<i>Phacelia insularis</i> ssp. <i>insularis</i>	Annual	1(5)				x	x	
<i>Thysanocarpus conchuliferus</i>	Annual	(8)			x			

NOTE.—Growth form, estimated number of populations within the past five or ten (in parentheses) years, and distribution (x) of the thirteen plant taxa; mA=middle Anacapa, wA=west Anacapa, CR=Santa Cruz, RO=Santa Rosa, MI=San Miguel, CA=Santa Catalina, h=historic distribution.

Since Brandegee's collection was made in 1888, few collections of *Arabis hoffmannii* have been made. On Santa Cruz Island, Moran made a collection from the "Central Valley" in 1950, and McPherson collected the plant near Centinela Grade, possibly the same location, in 1967 (Steve Junak, pers. comm. 1993). It was not until 1985 that Steve Junak relocated a population at this location (Schuyler 1986). For many decades, Hoffmann's original collection site, near Platts Harbor on Santa Cruz Island, was in "an area of intense feral animal (sheep) disturbance," and no plants could be found (Hochberg *et al.* 1980a). In fact, in 1983, the Service published in the **Federal Register** (48 FR 53640) a notice of review that considered this species to be extinct. However, surveys conducted by TNC in 1985 were successful in relocating the plant near Platts Harbor (Schuyler 1986).

According to Moran's field notes, he collected *Arabis hoffmannii* from Anacapa Island in 1941 "on the slopes above Frenchy's Cove" (S. Junak, pers. comm. 1993). However, no specimens from this collection have been found in herbaria with known collections of island species, and recent surveys have failed to relocate the plant on Anacapa Island (S. Junak, pers. comm. 1993). Hoffmann reported the plant from "the bank above Water Canyon" on Santa Rosa Island in 1930, but numerous recent surveys have failed to locate any plants from that location (S. Junak, pers. comm. 1993). In 1996, a new population of the plant was discovered near the mouth of Lobo Canyon on Santa Rosa Island (McEachern 1996, Wilken 1996). The population consists of eight plants, three of which were flowering and the remaining five were vegetative rosettes. The plants are located on a rocky shelf overhanging the canyon, and are

associated with giant coreopsis (*Coreopsis gigantea*), Greene's dudleya (*Dudleya greenei*), Indian pink (*Silene laciniata*), and non-native grasses. The canyon bottom below the shelf is heavily grazed and trampled by deer, cattle, and elk.

In addition to the lone population on Santa Rosa Island, *Arabis hoffmannii* is also currently known from three small populations that collectively cover less than 0.4 hectare (1 acre) on Santa Cruz Island. One of these three populations, near Platts Harbor is located on rocky volcanic cliffs along a north-facing canyon on lands owned by TNC. Because of inaccessibility, and the loose structure of the volcanic rock, the cliff site has not been thoroughly surveyed. Only a few dozen plants have been directly observed, but the cliffs may support additional individuals. A second population, near Centinela Grade, is growing on Santa Cruz Island volcanics and is associated with giant coreopsis (*Coreopsis gigantea*), Santa Cruz Island buckwheat (*Eriogonum arborescens*), and coastal prickly pear (*Opuntia littoralis*), on lands owned and managed by TNC. When Junak relocated this population, approximately 30 individuals were seen. TNC has monitored this population since 1990, with fewer than 30 plants observed each year (Klinger 1994a). The third population on Santa Cruz Island was located in 1995 near Stanton Ranch, and consists of 16 plants as of 1996 (Wilken 1996).

Recent research by Wilken (1996) on reproductive strategies of *Arabis hoffmannii* shows that individual plants in cultivation may reproduce within 2 years following establishment, with some plants surviving for at least 5 years. Individual rosettes are monocarpic, but some plants have more than one rosette. *Arabis hoffmannii*

does not appear to be dependent upon pollinators for seed set, and individual plants may produce as many as 3,000 to 4,000 seed. However, the small sizes of natural populations indicate that establishment success of new plants is low. Monitoring results at two sites on Santa Cruz Island (Centinela and Stanton) suggest poor establishment success because of a lack of favorable seed germination sites, a high rate of seedling mortality, or a combination of both factors (Wilken 1996). At these two sites, surviving plants tend to be found in the shade of shrubs where there is a low cover of annual species, suggesting that *Arabis hoffmannii* cannot tolerate competition with a high cover of annual species. Fewer than 100 plants in total were present in the three studied populations (Wilken 1996).

The major threats to *Arabis hoffmannii* are loss of soil, habitat degradation, trampling of potential seed germination sites by non-native ungulates, predation resulting from feral pig rooting, and competition with annual plants.

Arctostaphylos confertiflora (Santa Rosa Island manzanita) was described by Eastwood in 1934 from a collection made by Hoffmann 4 years earlier "in a sheltered dell south of Black Mountain" on Santa Rosa Island (Eastwood 1934). Munz (1958) published the new combination *Arctostaphylos subcordata* var. *confertiflora*. However, in subsequent treatments of the genus Wells (1968, 1993) has continued to use the original taxonomy.

Arctostaphylos confertiflora is a perennial shrub in the heath (Ericaceae) family that grows 0.1 to 2.0 m (4 in to 6.5 ft) high (Wells 1993). The plant has smooth, dark red-purple bark, densely hairy branchlets, bracts, and pedicels, and light green, round-ovate leaves. The flowers are borne in numerous dense

panicles that mature into flattened reddish-brown fruits (McMinn 1951). The only other manzanita that occurs on Santa Rosa Island, *Arctostaphylos tomentosa*, forms a fire-resistant burl at the base of the stems. *Arctostaphylos confertiflora* is not burl-forming and is considered an obligate seeder, requiring fire for regeneration. It occurs in prostrate and upright forms, the former most likely due to climatic and herbivorous influences (McMinn 1951).

Arctostaphylos confertiflora is known only from two areas on Santa Rosa Island. All but a few plants occur in the northeast portion of the island near, and east of, Black Mountain. Individual plants have been observed at scattered sites from upper Lobo Canyon east to the Torrey pine groves along Beechen's Bay, a distance of about 5 km (3 mi). Junak estimated that total habitat for the plant comprises only a few acres (S. Junak, pers. comm. 1994); Clark *et al.* (1990) noted that it occurs in low numbers. During 1994 surveys, three small patches were mapped within the Torrey pine groves, two in canyons on the north side of Black Mountain, and one plant near South Point (Rindlaub 1995). Additional surveys of potential habitat were begun in 1996 by United States Geological Survey Biological Resources Division (BRD) staff, but to date, few shrubs have been found (McEachern 1996). Observed shrubs have had recent twig growth browsed off by deer, and no seedlings or young plants have been observed. Ungulates have access to more than 90 percent of the plants (McEachern 1996). Fewer than 400 plants are estimated to occur, all restricted to nearly vertical canyon walls in eight populations in the Black Mountain vicinity (McEachern and Wilken 1996). Despite the steepness of the slopes, deer and elk are capable of traveling along trails which provide access to various portions of the populations. A few individuals are also known from Johnson's Lee on the south side of the island (Rindlaub 1994).

The plant is found on sedimentary substrates of Monterey shales and soft volcanoclastic sediments derived from San Miguel volcanics (Weaver *et al.* 1969). Near the southern tip of the island, a few individuals are scattered on the slopes above South Point on sandstone outcrops. The taxon occurs as a component of mixed chaparral, mixed woodland, Torrey pine woodland, and island pine woodland communities. Researchers observed that elk and deer bed down in the shade of larger shrubs, including *Arctostaphylos confertiflora*, causing compaction and erosion of soils, and exposing the roots of the plants (McEachern and Wilken 1996).

Arctostaphylos confertiflora is threatened by soil loss, low reproductive success, and herbivory by elk and deer that has contributed to reproductive failure. The seed bank is either absent or so depleted as a result of soil loss that a catastrophic fire could eliminate the species because recruitment is dependent upon fire treated seed.

Berberis pinnata ssp. *insularis* (island barberry) was described by Munz (Munz and Roos 1950) based on a specimen collected by Wolf in 1932 "west of summit of Buena Vista Grade (also known as Centinela Grade), interior of Santa Cruz Island." In 1981, Roof included this taxon in the genus *Mahonia* because the leaves are compound, in contrast with the simple leaves of *Berberis* (Roof 1981). However, Moran (1982) made the case that this one character was insufficient to defend *Mahonia* as a distinct natural group, and many subsequent treatments have included all North American taxa previously referred to *Mahonia* as *Berberis*. This taxon has been treated as *Berberis pinnata* ssp. *insularis* by Munz (1974), Smith (1976), and Williams (1993).

Berberis pinnata ssp. *insularis* is a perennial shrub in the barberry family (Berberidaceae). The plant has spreading stems that reach 2 to 8 m (5 to 25 ft) high, with large leaves divided into five to nine glossy green leaflets. Clusters of yellow flowers at the branch tips develop into blue berries covered with a white bloom (waxy coating). Because new shoots can sprout from underground rhizomes, many stems may actually represent one genetic clone (Hochberg *et al.* 1980b, California Native Plant Society (CNPS) 1984, Williams 1993). Recent research indicates that, although the plant is genetically self-compatible, it requires insect visitation for pollination. Each flower produces from 2 to 3 seeds, but in seed germination experiments only 8 out of 40 seedlings survived long enough to produce secondary leaves (Wilken 1996). Observations on the one plant in upper Cañada Christy indicated that, of over 100 flowers that were in bud in January 1996, only 7 immature fruit had developed by May, 1996 (Wilken 1996).

In a letter to Hoffmann in 1932 concerning *Berberis pinnata* ssp. *insularis*, Munz remarked that, "Brandege says of *B. pinnata*, that it is "common" on S.C. [Santa Cruz]" (S. Junak, *in litt.* 1994). *Berberis pinnata* ssp. *insularis* is currently known from three small populations in moist, shaded canyons on Santa Cruz Island. Hoffmann found several individuals "in

Elder canyon that runs from west into Cañada de la Casa" on Santa Rosa Island in 1930 (California Natural Diversity Data Base (CNDDB) 1993). No plants have been found on Santa Rosa Island since that time despite surveys by staff from the Service, NPS, BRD, and Santa Barbara Botanic Garden between 1993 and 1996. Dunkle collected *Berberis pinnata* ssp. *insularis* on West Anacapa Island in 1940, but the plant was not found there again until 1980, when one clone was found in Summit Canyon associated with chaparral species, including poison oak (*Toxicodendron diversilobum*), monkeyflower (*Mimulus aurantiacus*), coyote bush (*Baccharis* sp.), goldenbush (*Hazardia detonsus*), island alum-root (*Heuchera maxima*) and wild cucumber (*Marah macrocarpus*). In 1994, Junak, Halvorson, and Chaney visited this site and found that the clone had died (Chaney 1994), and the plant is therefore believed to be extirpated from Anacapa Island.

The three known populations of *Berberis pinnata* ssp. *insularis* occur on Santa Cruz Island. One population on the north slope of Diablo Peak comprises 24 large stems and 75 small stems (Klinger 1994c); this number of stems may represent one or several clonal individuals. In 1979, a second population near Campo Raton (Cañada Cristy) was estimated to be fewer than 10 individuals, but in 1985, only one plant was seen (CNDDB 1994). Habitat for the plant was systematically searched recently in the Campo Raton area and two individuals were located. Both plants were in danger of uprooting from erosion and only one plant flowered but it did not set fruit (Wilken *in litt.* 1997). The size of the third known population, at Hazard's Canyon, has not been determined due to inaccessibility, but Schuyler estimated that there were between one and seven plants at this location (Wilken 1996).

Berberis pinnata ssp. *insularis* is threatened by soil loss and habitat alteration caused by feral pig rooting. Although ex-situ clones have been established from vegetative cuttings, populations in the field show no signs of successful sexual reproduction.

Castilleja mollis (soft-leaved paintbrush) was described by Pennell as *Castilleja mollis* in 1947, based on material collected on Santa Rosa Island in 1939 (Ingram 1990, Heckard *et al.* 1991). Hoover (1970) and Munz and Keck (1973) included plants of coastal sand dunes of San Luis Obispo County in the description of this taxon. However, the taxon is now considered to be endemic to Santa Rosa Island (Ingram 1990, Heckard *et al.* 1991).

Castilleja mollis is a partially parasitic perennial herb in the figwort (Scrophulariaceae) family. The most likely host in this case is goldenbush (*Isocoma menziesii* var. *sedoides*) (Painter 1995, Wetherwax 1995). The plant has semi-prostrate branches that reach 40 cm (16 in) in length, with bracts and upper leaves that are grayish, fleshy, broad and rounded and crowded at the apex, and the bract and calyx are yellow to yellowish green above (Heckard *et al.* 1991). Ingram (1990) identified several morphological differences between *Castilleja mollis* and the similar *Castilleja affinis*, including the indument (covering) of distinctive branched hairs and rounded stem leaves in the former taxon. Observations by Rindlaub (1994) and NPS staff (NPS 1996) indicate that individuals at higher elevations at one site (Carrington Point) may represent hybrids between *Castilleja affinis* and *Castilleja mollis*.

Two specimens collected from Point Bennett on San Miguel Island by Elmore in 1938 are possibly *Castilleja mollis* (Wallace 1985; Heckard *et al.* 1991). Despite recent searches, the taxon has not been seen on the San Miguel Island since then (S. Junak, pers. comm. 1994). *Castilleja mollis* is currently known only from two areas on Santa Rosa Island, Carrington Point in the northeast corner of the island, and west of Jaw Gulch and Orr's Camp along the north shore of the island. At Carrington Point, the plant occurs in stabilized dune scrub vegetation dominated by goldenbush (*Isocoma menziesii* var. *sedoides*), lupine (*Lupinus albifrons*), and Pacific ryegrass (*Leymus pacificus*). At Jaw Gulch, the paintbrush occurs with alien iceplants (*Carpobrotus* spp. and *Mesembryanthemum* spp.), native milk-vetch (*Astragalus miguelensis*), and alien grasses.

In 1993, the Jaw Gulch population was estimated to have up to 1,000 individuals covering an area of less than 2 ha (5 ac) (C. Rutherford and T. Thomas, USFWS, pers. obs. 1993), an estimate confirmed in recent field studies (McEachern and Wilken 1996). During Ingram's field studies in 1990, the Carrington Point population consisted of only 20 individuals (Ingram 1990). The current estimate for the Carrington population is several hundred plants (McEachern and Wilken 1996).

In 1994, Rindlaub gathered abundance and density data for the two populations: on Carrington Point, population density averaged 0.9 plants/sq m, and at Jaw Gulch, population density averaged 2.0 plants/sq m. Demographic plots were established in

1995 in both populations. Although analysis of 1995 and 1996 data is not complete, initial analysis indicates that approximately 50 percent of *Castilleja mollis* stems were broken, either through browsing or trampling. Trailing and deer droppings have been observed at the Carrington Point population, and cattle, deer, and elk droppings were observed at the Jaw Gulch population between 1994 and 1996 (McEachern 1996). The Jaw Gulch population was also used as a bedding area for deer during the fall of 1993 (Dan Richards, CINP, pers. comm. 1994).

The most severe threat to *Castilleja mollis* is deer and elk browsing and grazing. Other threats to *Castilleja mollis* are soil loss, habitat alteration and herbivory by cattle, deer bedding, and competition with alien plant taxa. *Castilleja mollis* is also known to be hemi-parasitic, or partially dependent on a host plant for water and dissolved substances (Chuang and Heckard 1993). Therefore, loss of the probable host plant, goldenbush, through these same mechanisms also reduces the ability of *Castilleja mollis* to reproduce (E. Painter, *in litt.* 1997, M. Weatherwax, *in litt.* 1995).

Dudleya nesiotica (Santa Cruz Island dudleya) was described by Moran (1950b) as *Hasseanthus nesioticus* based on a specimen collected from a "flat area near edge of sea bluff, Fraser Point," on the west end of Santa Cruz Island in 1950. Three years later, Moran (1953) transferred the species to the genus *Dudleya*, as *Dudleya nesiotica*.

Dudleya nesiotica is a succulent perennial in the stonecrop family (Crassulaceae). The plant has a corm-like stem with 8 to 16 oblanceolate leaves in a basal rosette from which several flowering stems 3 to 10 cm (1.2 to 4.0 in) tall arise. The white five-petaled flowers and resulting fruits are erect to ascending. Recent research by Wilken (1996) indicates that the number of flowers per plant ranges from 6 to 12.

Dudleya nesiotica is known only from one population, the type locality at Fraser Point on the west end of Santa Cruz Island (Vivrett *in litt.* 1996). The population is situated on the lowest marine terrace in coastal scrub and grasslands (Junak *et al.* 1995). The west end of the population is associated with sagebrush (*Atriplex californica*), iceplant (*Mesembryanthemum nodiflorum*), alkali heath (*Frankenia salina*), goldfields (*Lasthenia californica*), and pickleweed (*Salicornia subterminalis*). The east end of the population is associated with Australian saltbush (*Atriplex semibaccata*), brome (*Bromus hordeaceus*), goldfields (*Lasthenia californica*), purple

needlegrass (*Nasella pulchra*), and vulpia (*Vulpia myuros*).

Since the time the proposed rule was prepared, more accurate information on location, extent, and size of populations has been gathered by Wilken (1996). Within the general area near Fraser Point, where a total of 13 ha (32 ac) are occupied by the plant, four sites of high densities were sampled. From 1994 to 1996, estimates of absolute population size ranged from 30,000 to 60,000 plants (Wilken *in litt.* 1997) which is a substantial increase in the numbers believed to exist during the preparation of the proposed rule.

The Nature Conservancy has calculated density, cover, and height of plants within 30 randomly selected plots at this location since 1991. Annual variation in density has ranged from 16.9 to 29.1 plants/sq m (20.2 to 34.8/sq yard), annual variation in cover has ranged from 8.7 to 16.1 percent, and annual variation in height of rosettes has ranged from 1.27 to 1.68 cm (0.50 to 0.66 in) (Klinger 1995).

Dudleya nesiotica remains vulnerable to soil loss, herbivory by feral pigs, and disturbance by pig rooting. Like many dudleyas, *Dudleya nesiotica* is also vulnerable to collecting for botanical or horticultural use (Moran 1979).

Galium buxifolium (island bedstraw) was described by Greene in 1886 based on specimens collected on Santa Cruz Island (Ferris 1960). In 1958, Dempster included the taxon as a variety of *Galium catalinense*. Ferris (1960) suggested that the taxon was subspecifically distinct from *Galium catalinense*. In 1973, Dempster recognized the taxon as a separate species based on differences in the nutlet hairs between it and *Galium catalinense*.

Galium buxifolium is a small, stout woody shrub in the bedstraw (Rubiaceae) family. The plant grows to 12 decimeters (dm) (4 ft) in height, and has swollen nodes bearing numerous leafy branches. The leaves are larger than those of most other *Galium* taxa, and have conspicuous lateral veins with stout hairs on the lower surface (Dempster 1973). The relatively broad leaves and the tiny upward-curved hairs that cover the fruits are unique characteristics that distinguish it from the six other species of *Galium* that occur on the islands (Hochberg *et al.* 1980b).

A putative collection of *Galium buxifolium* was made from the "Torrey Pine grove, Santa Rosa Island," in 1941 by Moran; apparently this was a misidentified collection of *Galium nuttallii* (York, *in litt.* 1987). Therefore no collections of this taxon are known

from Santa Rosa Island. *Galium buxifolium* is currently known from Santa Cruz and San Miguel Islands where it occurs on north-facing sea cliffs. Eight populations occur on TNC lands on Santa Cruz Island. In 1980, Hochberg *et al.* (1980b) noted that two of these populations had fewer than 50 individuals each, and the remaining populations had less than six individuals each. No recent status information is available for the Santa Cruz Island populations. Two populations were located on San Miguel Island in 1993, one with about 200 individuals, and the other having fewer than ten plants. Five other historical collections have been made from the island, but no plants have been seen at these other localities for almost 30 years. The plant occurs on "bluffs and rocky slopes" (Dempster 1973) in coastal sage scrub and island pine forest.

Galium buxifolium is threatened by soil loss, and habitat alteration and herbivory from feral pig rooting and sheep grazing.

Gilia tenuiflora ssp. *hoffmannii* (Hoffmann's slender-flowered *Gilia*) was described as *Gilia hoffmannii* by Eastwood in 1940 based on collections made by Hoffmann "in sandy soil at East Point" on Santa Rosa Island ten years earlier (Eastwood 1940). Eastwood remarked that, although the taxon is related to *Gilia tenuiflora*, no variation of the latter included the leafy stems and terminal congested inflorescence of *Gilia hoffmannii* (Eastwood 1940). Nevertheless, Jepson (1943) included the taxon in the description of *Gilia tenuiflora* var. *tenuiflora* in his flora of California, as did Abrams (1951) in his flora of the Pacific states. In 1959, Munz included the varieties of *tenuiflora* as subspecies, including ssp. *hoffmannii*, as per a 1956 treatment by the Grants (Munz and Keck 1973). This nomenclature was used in the latest treatment of the genus (Day 1993). Of the four subspecies of *Gilia tenuiflora*, the subspecies *hoffmannii* is the only one that occurs in southern California. Two other *Gilia* species occur on Santa Rosa Island, but *G. tenuiflora* ssp. *hoffmannii* is distinguished from them by the presence of arachnoid woolly pubescence at the base of the stem.

Gilia tenuiflora ssp. *hoffmannii* is a small, erect annual herb in the phlox (Polemoniaceae) family. The central stem grows 6 to 12 cm (2.4 to 4.7 in) tall, arising from a rosette of densely hairy, strap-shaped, short-lobed leaves. The flowers are purplish and funnel-shaped below, widening to five pinkish corolla lobes.

Gilia tenuiflora ssp. *hoffmannii* historically has only been collected from two locations on Santa Rosa Island. A collection was made by Reid Moran from the "arroyo between Ranch and Carrington Point" in 1941 (Rutherford and Thomas 1994). In 1994, Rindlaub located a population of 88 individuals covering 2 sq m that reasonably corresponds to Moran's site and is grazed by cattle (Rindlaub 1994). The other historical location is at the type locality near East Point on Santa Rosa Island, where it is still found. Here, it occurs as a component of dune scrub vegetation with sand verbena (*Abronia maritima*), silver beach-weed (*Ambrosia chamissonis*), saltgrass (*Distichlis spicata*), miniature lupine (*Lupinus bicolor*), plantain (*Plantago erecta*), and sand-dune bluegrass (*Poa douglasii*) (T. Thomas, in litt. 1993). In 1994, this population consisted of about 2,000 plants (Rindlaub 1994). During 1994 surveys, a third population comprised of three colonies was found at Skunk Point. This population comprised approximately 3,000 to 3,500 individuals that had been obviously grazed by cattle (Rindlaub 1994).

Gilia tenuiflora ssp. *hoffmannii* is threatened by soil damage, habitat alteration and herbivory by cattle, elk and deer. A sandy service road used by NPS and ranchers bisects the East Point population. NPS constructed a fence to exclude cattle from a portion of the largest population; however, a considerable portion of the population has had increased trampling by cattle and greater impacts from vehicles as a result of the fence construction and continued use of the road.

Helianthemum greenei (Island rush-rose) was described by Robinson as *Helianthemum greenei* in 1895 (Abrams 1951). The type locality was described as "a dry summit near the central part of the island of Santa Cruz" (Abrams 1951). This nomenclature was retained in the most recent treatment for the genus (McClintock 1993).

Helianthemum greenei is a small shrub in the rock-rose (Cistaceae) family. The plant grows to 0.5 m (18 in) tall and has alternate leaves covered with star-shaped hairs. The reddish, glandular stalks support yellow-petaled flowers to 2.5 cm (1 in) wide. The fruit is a pointed capsule 0.6 cm (0.25 in) long. A more abundant species found on the islands, *Helianthemum scoparium*, is similar in appearance, but is not glandular-hairy and has greenish stalks and smaller fruits (Hochberg 1980b).

McMinn (1951) and later Thorne (1967) reported seeing *Helianthemum greenei* on San Miguel Island, but no collections exist from that island in

herbaria (Hochberg *et al.* 1980b, Wallace n.d.). Two collections of the plant were made from Santa Rosa Island by Epling and Erickson and Dunn in the 1930's (Wallace 1985), but no collections on Santa Rosa Island have been made since that time, despite recent surveys.

Helianthemum greenei was reported from the northeast side of Black Jack Mountain on Santa Catalina Island by Thorne (1967) in 1966. No collections have been made at this locality but a population of three individuals was recently reported from there (Janet Takara, Catalina Island Conservancy, pers. comm. 1994). Habitat for the plant on Santa Catalina Island is being grazed by goats, mule deer, and bison, and is being rooted by pigs.

In addition to the one population on Santa Catalina Island, *Helianthemum greenei* is currently known from 14 populations on Santa Cruz Island. The taxon is found in open, exposed areas in chaparral, coastal sage scrub, and island pine forest. In 1980, prior to sheep removal from TNC lands on Santa Cruz Island, Hochberg *et al.* (1980b) found that, of ten populations, two had several dozen individuals, and six others had fewer than six individuals. Hochberg *et al.* (1980b) indicated that the plant is eliminated by intense feral animal disturbance, and noted that the population recorded by Abrams and Wiggins in 1930 at Pelican Bay has not been relocated. The BRD sponsored surveys in 1995 and 1996 reported 14 populations, ten of which had nine as the mean number of plants and four had populations that ranged from 500 to 1,000 (McEachern and Wilken 1996). The number of individuals was clearly related to recent fire history with the ten sites having few individuals being unburned, and four populations with a mean number of 663 having burned in 1994 (McEachern and Wilken 1996).

Helianthemum greenei is vulnerable to soil damage, altered fire frequencies and intensities, and rooting by feral pigs.

Malacothamnus fasciculatus var. *nesioticus* (Santa Cruz Island bushmallow) was described by Robinson in 1897, as *Malvastrum nesioticum*, based on material collected by Greene in 1886 (Robinson 1897). This taxon has been placed in several different genera, as *Malacothamnus nesioticus* (Abrams 1910), *Sphaeralcea nesiotica* (Jepson 1925), *Sphaeralcea fasciculata* var. *nesiotica* (Jepson 1936), and *Malvastrum fasciculatum* var. *nesioticum* by McMinn (Kearney 1951). Kearney (1951) published the combination *Malacothamnus fasciculatus* var. *nesioticus*. Bates (1993) did not recognize var. *nesioticus* as

being distinct noting that *Malacothamnus fasciculatus* is a highly variable species "with many indistinct and intergrading local forms." Of var. *nesioticus*, Bates (1993) notes that the taxon is essentially indistinguishable from the mainland var. *nuttallii*.

However, recent studies on the genetics of *Malacothamnus* have determined that var. *nesioticus* is a distinct variety (Swenson *et al.* 1995), and it is recognized as such in the Flora of Santa Cruz Island (Junak *et al.* 1995).

Malacothamnus fasciculatus var. *nesioticus* is a small soft-woody shrub in the mallow (Malvaceae) family. The plant reaches up to 2 m (6 ft) tall, and has slender branches covered with star-shaped hairs. The palmately shaped leaves are dark green on the upper surface and gray on the lower surface. The rose-colored flowers are up to 3.75 cm (1.5 in) broad and scattered along the ends of the branches (Hochberg *et al.* 1980b). It is differentiated from the mainland var. *nuttallii* by its bicolored leaves and genetic distinction (Swenson *et al.* 1995).

Malacothamnus fasciculatus var. *nesioticus* was already rare by the turn of the century when Greene wrote that the plant was "rare; only two bushes seen, and these under the protection of large opuntias; perhaps thus kept from the sheep" (Hochberg *et al.* 1980a).

Malacothamnus fasciculatus var. *nesioticus* is currently known from two small populations on Santa Cruz Island where it occurs within a coastal sage scrub community (Wilken 1996). One population of less than 50 individuals (10 clones) is located on the west shore of the island near the historic Christy Ranch. The second population was discovered in 1993 in the Central Valley near the University of California Field Station. Recent genetic analyses of the Central Valley population indicated that, although there are 19 individual shrubs, they consist of only 3 genotypes or 3 clones (Swensen *et al.* 1995).

Malacothamnus fasciculatus var. *nesioticus* is threatened by soil loss, habitat alteration, and feral pig rooting.

Malacothrix indecora (Santa Cruz Island malacothrix) was described by Greene (1886) as *Malacothrix indecora* based on specimens collected from "islets close to the northern shore" of Santa Cruz Island (Greene 1886). In 1957, Williams published the combination *Malacothrix foliosa* var. *indecora* (Ferris 1960). Munz (1974) subsequently synonymized the taxon with *Malacothrix foliosa*. However, Ferris (1960) and others (Smith 1976, Davis 1980) continued to recognize the taxon as a separate species with the name *Malacothrix indecora*. The latter nomenclature was retained in the most

recent treatment of the genus (Davis 1993).

Malacothrix indecora is an annual herb in the aster (Asteraceae) family. The 20 to 40 cm (8 to 16 in) tall stems support numerous broadly lobed fleshy leaves with blunt tips. The greenish yellow flowers are in hemispheric heads surrounded by linear bracts (Hochberg 1980b; Scott in Junak *et al.* 1995). Two other annual species of *Malacothrix* occur on the same islands as *Malacothrix indecora*; however, the achenes (seeds) of *Malacothrix similis* are topped with 18 teeth and 1 bristle and *Malacothrix squalida* is topped with irregular teeth and no bristle, whereas *Malacothrix indecora* has neither of these features (Scott in Junak *et al.* 1995).

Historical collections of *Malacothrix indecora* were made from several locations on the northeast shore of San Miguel Island, and on Prince Island off of the north shore of San Miguel Island by Greene, and, later, by Hoffmann (Hochberg *et al.* 1979; Davis 1987). In 1978, Hochberg *et al.* (1979) observed three populations. Halvorson *et al.* (1992) reported finding this species at one location during surveys in 1988 and 1989, but no collections were made to confirm identification of the taxon. On Santa Cruz Island, *Malacothrix indecora* was collected near Twin Harbor by Williams in 1939 (Davis 1987), but this population has not been relocated.

Malacothrix indecora is currently known from two populations. Junak discovered one population in 1980 at Black Point on the west end of Santa Cruz Island. Several hundred individuals were observed at this site by Junak in 1985 in exposed coastal flats, where it was associated with Santa Cruz Island buckwheat (*Eriogonum grande* var. *rubescens*) and iceplant (*Mesembryanthemum nodiflorum*) (CNDDDB 1991). On a subsequent trip in 1989, only 50 plants were observed in the same location (S. Junak, pers. comm. 1994), and fewer than 100 plants in 1996 (Wilken *in litt.* 1997). The second population of *Malacothrix indecora*, also comprised of fewer than 100 plants, was discovered on Santa Rosa Island in 1996 at the mouth of Lobo Canyon (Wilken *in litt.* 1997).

Malacothrix indecora is threatened by soil loss, habitat alteration and herbivory resulting from feral pig rooting, cattle grazing and trampling, and seabird activity. Historical habitat for *Malacothrix indecora* on San Miguel Island and Prince Island has been altered by seabird nesting activity.

Malacothrix squalida (island malacothrix) was described by Greene in 1886 from specimens collected from

an islet off the northern shore of Santa Cruz Island (Greene 1886). In 1957, Williams published the combination *Malacothrix foliosa* var. *squalida*; a year later, Ferris (1960) published the combination *Malacothrix insularis* var. *squalida*. In 1959, Munz recognized the taxon as *Malacothrix squalida*; however, 14 years later, he synonymized it with *Malacothrix foliosa* (Munz 1974). In a review of insular species of *Malacothrix*, Davis (1980) recognized the taxon as *Malacothrix squalida*, a treatment he recently retained (Davis 1993).

Malacothrix squalida is an annual herb in the aster family. Unlike *Malacothrix indecora*, the plant only reaches 9 cm (3.5 in) tall, and has linear to widely lanceolate leaves that are irregularly toothed or lobed. The light yellow flowers are clustered in hemispheric heads 12 to 15 millimeters (mm) (0.5 to 0.6 in) long. *Malacothrix indecora* is the only other annual *Malacothrix* that occurs on the same island as *Malacothrix squalida*; however, the latter is a much larger species, and also differs in the achene characteristics previously mentioned (Junak *et al.* 1995).

Malacothrix squalida has been collected from two locations along the north shore of Santa Cruz Island; Greene collected it near Prisoner's Harbor in 1886, but the species was not seen on the island again until Philbrick and Benedict collected it in 1968 near Potato Harbor where sheep overgrazing is a major problem (Rutherford and Thomas 1994). On Middle Anacapa Island, the plant was first collected by Martin Piehl in 1963, and more recently in 1978 and 1986. The plant was known from several small colonies atop coastal bluffs on the east end of the island. Surveys by Junak and Davis in 1989 failed to find any individuals, however, this may have been due to the drought that year (S. Junak, pers. comm. 1994). Although *Malacothrix squalida* has not been seen in recent years, all historical localities and potential habitat for the species have not been inventoried.

All of the historical localities for *Malacothrix squalida* are impacted by soil loss, habitat alteration, sheep grazing, and feral pig rooting. Any extant populations are also likely to be threatened by these factors. Seabird nesting may have localized impacts to some populations on Middle Anacapa Island.

Phacelia insularis ssp. *insularis* (island phacelia) was described by Munz in 1932 based on plants growing "on sand dunes at northeastern part of Santa

Rosa Island" (Munz 1932). Jepson published the new combination *Phacelia curvipes* var. *insularis* in 1943. After examining specimens from coastal northern California and determining their affinity to the island plants, Howell (1945) re-elevated the taxon to specific level, separating out the northern California plants as *Phacelia insularis* var. *continentis*, leaving *Phacelia insularis* var. *insularis* to refer to the island plants. In 1951, Abrams, who did not have access to collections of *Phacelia* from northern California, included the taxon in the description of *Phacelia divaricata*, a taxon common in southern California. In 1959, Munz published the new combination *Phacelia divaricata* var. *insularis*. Constance agreed with Howell's interpretation and has referred to the taxon as *Phacelia insularis* var. *insularis* (Constance 1979). This nomenclature was retained in the latest treatment of the genus (Wilken et al. 1993).

Phacelia insularis ssp. *insularis* is a decumbent (reclining), branched annual of the waterleaf (Hydrophyllaceae) family. The short-hairy and glandular stems grow to 1.5 dm (6 in) high from a basal rosette of leaves. The small lavender to violet, bell-shaped flowers are borne in loose cymes. *Phacelia insularis* var. *insularis* can be distinguished from the other species of *Phacelia* on the islands based on the hastate leaf shape with basal lobes. The other *Phacelia* have pinnately divided or undivided but ovate leaves.

Phacelia insularis ssp. *insularis* occurs on Santa Rosa Island and San Miguel Island. Clifton Smith collected the species at Carrington Point on Santa Rosa Island in 1973, where Sarah Chaney also found the species in 1994. In subsequent surveys 31 plants were reported from this site (Rindlaub 1994). On San Miguel Island, *Phacelia insularis* ssp. *insularis* was collected by Hoffmann in 1930 and by Munz in 1932. It was not collected again until 1978, when four populations were found (Hochberg et al. 1979). Drost relocated one of these sites on a bluff above Cuyler Harbor in 1984 (Halvorson et al. 1992). NPS staff has been watching for the taxon on San Miguel Island, but it has not been seen. The population on Santa Rosa Island is currently the only known occurrence. *Phacelia insularis* ssp. *insularis* is found within the island grassland community which is dominated by alien grasses, including slender wild oat (*Avena barbata*), wild oat (*Avena fatua*), ripgut (*Bromus diandrus*), and soft chess (*Bromus hordeaceus*), with scattered native bunchgrasses, shrubs, and herbs (Hochberg et al. 1979).

Phacelia insularis ssp. *insularis* is threatened by soil damage, competition with non-native grasses, and habitat alteration caused by cattle grazing, and elk and deer browsing.

Thysanocarpus conchuliferus (Santa Cruz Island fringe-pod) was described by Greene in 1886 based on material he and Brandegee collected where they found it "common on mossy shelves and crevices of high rocky summits and northward slopes" on Santa Cruz Island (Greene 1886b). Four decades later, Jepson published the new combination *Thysanocarpus laciniatus* var. *conchuliferus* as one of three varieties of *Thysanocarpus laciniatus* (Jepson 1925). Later, Abrams (1944) treated the plant as a species. Munz, however, considered it to be one of six varieties of *Thysanocarpus laciniatus* (Munz and Keck 1973). In the most recent treatment of the genus, Rollins treated the plant as a species (Rollins 1993).

Thysanocarpus conchuliferus is a small delicate annual herb in the mustard (Brassicaceae) family. The one to several branches grow 5 to 12.7 cm (2 to 5 in) high. The narrow, linearly lobed leaves alternate along the stems, which terminate in a raceme of minute pink to lavender flowers. While all members of this genus have round, flattened fruits with wings, *Thysanocarpus conchuliferus* is the only species in the genus with a bowl-shaped fruit; this taxon is also smaller in stature than *Thysanocarpus laciniatus*, which occurs in the same habitat (Wilken *in litt.* 1997).

In 1932, Ralph Hoffmann reported that *Thysanocarpus conchuliferus* was "frequent * * * from the north shore to the southwest portion of the island" (Hochberg et al. 1980a). Fourteen historical locations are known from herbarium records. In 1980, eight of these populations were relocated (Hochberg et al. 1980b). In 1991, plants were found at six of these locations, but no plants were found at five other sites (Klinger 1994b). In 1993, no individuals were found at any of the 14 reported locations. Survey reports indicate that, in addition to abundant rainfall that may have increased competition from alien grasses, rooting by feral pigs was observed at all 14 locations (Klinger 1994b). No verifiable observations of this species have been made in over 2 years, but all historic locations have not been revisited (Wilken *in litt.* 1997).

Thysanocarpus conchuliferus occurs on rocky outcrops on ridges and canyon slopes, and is associated with a variety of herbs, ferns, grasses, dudleya, and *Selaginella* (Santa Barbara Botanic Garden 1994). All of the historical localities for *Thysanocarpus*

conchuliferus are impacted by soil loss, habitat alteration and predation resulting from feral pig rooting. Any extant populations are also likely to be threatened by these factors.

Because all 13 taxa occur only as small, isolated populations with few individuals, these plant species are also more vulnerable to extinction by such random events as storms, drought, or landslide. The small populations and few individuals may also make these taxa vulnerable to reduced reproductive vigor.

Previous Federal Action

Federal action on these plants began as a result of section 12 of the Endangered Species Act of 1973, which directed the Secretary of the Smithsonian Institution to prepare a report on those plants considered to be endangered, threatened, or extinct in the United States. This report, designated as House Document No. 94-51, was presented to Congress on January 9, 1975. In that document, *Arabis hoffmannii*, *Castilleja mollis*, *Galium buxifolium*, *Gilia tenuiflora* ssp. *hoffmannii*, and *Berberis pinnata* ssp. *insularis* were considered to be threatened, and *Dudleya nesiotica* and *Malacothamnus fasciculatus* var. *nesiotica* (as *Malacothamnus fasciculatus*) were considered to be endangered. The Service published a notice in the July 1, 1975, **Federal Register** (40 FR 27823) of its acceptance of the report of the Smithsonian Institution as a petition within the context of section 4(c)(2) (petition provisions are now found in section 4(b)(3) of the Act) and its intention thereby to review the status of the plant taxa named therein. On June 16, 1976, the Service published a proposal in the **Federal Register** (42 FR 24523) to determine approximately 1,700 vascular plant species to be endangered species pursuant to section 4 of the Act. *Dudleya nesiotica* was included in the June 16, 1976, **Federal Register** document.

General comments received in relation to the 1976 proposal were summarized in an April 26, 1978, **Federal Register** publication (43 FR 17909). The Endangered Species Act Amendments of 1978 required that all proposals over 2 years old be withdrawn. A 1-year grace period was given to those proposals already more than 2 years old. In the December 10, 1979, **Federal Register** (44 FR 70796), the Service published a notice of withdrawal of the portion of the June 6, 1976, proposal that had not been made final, along with four other proposals that had expired.

The Service published an updated notice of review for plants on December 15, 1980 (45 FR 82480). This notice included *Arabis hoffmannii*, *Berberis pinnata* ssp. *insularis*, *Castilleja mollis*, *Dudleya nesiotica*, and *Malacothamnus fasciculatus* var. *nesiotica* as category 1 taxa. Category 1 taxa were those for which the Service had on file substantial information on biological vulnerability and threats to support preparation of listing proposals.

Arctostaphylos confertiflora, *Galium buxifolium*, and *Gilia tenuiflora* ssp. *hoffmannii* were included as category 2 taxa. Category 2 taxa were those for which data in the Service's possession indicate listing is possibly appropriate, but for which substantial data on biological vulnerability and threats were not currently known or on file to support proposed rules. On February 28, 1996, the Service published a notice of review in the **Federal Register** (61 FR 7596) that discontinued the designation of category 2 species as candidates.

On November 28, 1983, the Service published in the **Federal Register** a supplement to the Notice of Review (48 FR 53640), in which *Arabis hoffmannii* was listed as a category 1* taxon, the asterisk indicating that the species was believed to be extinct. In the same notice, *Castilleja mollis*, *Dudleya nesiotica*, *Gilia tenuiflora* ssp. *hoffmannii*, *Helianthemum greenei*, *Berberis pinnata* ssp. *insularis* (as *Mahonia*), *Malacothamnus fasciculatus*, *Phacelia insularis* var. *insularis*, and *Thysanocarpus conchuliferus* were included as Category 2 candidates.

The plant notice was revised again on September 27, 1985 (50 FR 39526). In that notice, all taxa maintained their previous status. On February 21, 1990 (55 FR 6184), the plant notice was again revised. In this notice, *Arabis hoffmannii* was included as a category 1 candidate, as individuals of this taxon had been rediscovered since the previous Notice of Review.

Arctostaphylos confertiflora, *Castilleja mollis*, *Dudleya nesiotica*, *Galium buxifolium*, *Gilia tenuiflora* ssp. *hoffmannii*, *Helianthemum greenei*, *Berberis pinnata* ssp. *insularis*, *Malacothamnus fasciculatus*, *Phacelia insularis* var. *insularis*, and *Thysanocarpus conchuliferus* were included as category 2 candidates. *Malacothrix indecora* was included in the February 21, 1990, notice for the first time as a category 2 candidate.

The plant notice was revised on September 30, 1993 (58 FR 51144). In this notice, *Arabis hoffmannii*, *Arctostaphylos confertiflora*, *Castilleja mollis*, *Galium buxifolium*, *Gilia tenuiflora* ssp. *hoffmannii*, *Berberis*

pinnata ssp. *insularis*, *Malacothamnus fasciculatus* var. *nesioticus*, *Malacothrix indecora*, *Phacelia insularis* var. *insularis*, and *Thysanocarpus conchuliferus* were included as category 1 candidates. *Dudleya nesiotica* and *Helianthemum greenei* were included as category 2 candidates; *Malacothrix squalida* was included for the first time as a category 2 candidate.

On July 25, 1995, the Service published a proposed rule in the **Federal Register** (60 FR 37993) to list *Arabis hoffmannii*, *Arctostaphylos confertiflora*, *Berberis pinnata* ssp. *insularis*, *Castilleja mollis*, *Dudleya nesiotica*, *Galium buxifolium*, *Gilia tenuiflora* ssp. *hoffmannii*, *Helianthemum greenei*, *Malacothamnus fasciculatus* var. *nesioticus*, *Malacothrix indecora*, *Malacothrix squalida*, *Phacelia insularis* var. *insularis*, and *Thysanocarpus conchuliferus* as endangered. Also included in this proposed rule were *Dudleya blochmaniae* ssp. *insularis*, *Dudleya* sp. nov. "East Point," and *Heuchera maxima* as endangered. Based upon new information received since publishing the proposed rule, the proposed listing of the latter three taxa has been withdrawn by the Service as announced in a separate **Federal Register** notice published concurrently with this final rule.

Section 4(b)(3)(B) of the Act requires the Secretary to make certain findings on pending petitions within 12 months of their receipt. Section 2(b)(1) of the 1982 amendments further requires that all petitions pending on October 13, 1982, be treated as having been newly submitted on that date. This was the case for *Arabis hoffmannii*, *Castilleja mollis*, *Dudleya nesiotica*, *Galium buxifolium*, *Gilia tenuiflora* ssp. *hoffmannii*, *Berberis pinnata* ssp. *insularis*, and *Malacothamnus fasciculatus* var. *nesioticus* because the 1975 Smithsonian report had been accepted as a petition. On October 13, 1983, the Service found that the petitioned listing of these species was warranted, but precluded by other pending listing actions, in accordance with section 4(b)(3)(B)(iii) of the Act; notification of this finding was published on January 20, 1984 (49 FR 2485). Such a finding requires the petition to be recycled, pursuant to section 4(b)(3)(C)(I) of the Act. The finding was reviewed in October of 1984 through 1993. Publication of the proposed rule constituted the warranted finding for these species.

The processing of this final rule follows the Service's fiscal year 1997 listing priority guidance published in the **Federal Register** on December 5,

1996 (61 FR 64475). The guidance clarifies the order in which the Service will process rulemakings following two related events: (1) the lifting, on April 26, 1996, of the moratorium on final listings imposed on April 10, 1995 (Public Law 104-6), and (2) the restoration of significant funding for listing through the Omnibus Budget Reconciliation Act passed on April 26, 1996, following severe funding constraints imposed by a number of continuing resolutions between November 1995 and April 1996. The guidance calls for giving highest priority to handling emergency situations (Tier 1) and second highest priority (Tier 2) to resolving the listing status of outstanding proposed listings. This final rule falls under Tier 2.

Summary of Comments and Recommendations

In the July 25, 1995 proposed rule and associated notifications, all interested parties were requested to submit factual reports or information that might contribute to the development of a final rule. Appropriate Federal agencies, State agencies, local governments, scientific organizations, and other interested parties were contacted and requested to comment. Newspaper notices inviting public comment were published on August 5, 1995 in the *Santa Barbara News-Press* and on August 11, 1995 in the *Los Angeles Times*. The comment period closed on October 9, 1995. A second comment period was opened from January 22, 1997 to February 21, 1997 (62 FR 3263) because of substantive changes in the status and conservation efforts for the benefit of several of the taxa in the rule.

In compliance with Service policy on information standards under the Act (59 FR 34270: July 1, 1994), the Service solicited the expert opinions of three appropriate and independent specialists regarding pertinent scientific or commercial data and assumptions relating to the taxonomy, population status, and supportive biological and ecological information for the 16 proposed plants. Comments from these reviewers included corrections to the range of the species, the acceptance of the taxonomic determination for one of the species, and additional information on populations and status for several of the species in the rule. These revisions have been incorporated into this final rule.

The Service received 15 letters concerning the proposed rule during the comment periods, including those of one State agency and 14 individuals or groups. Eleven commenters supported

the listing proposal, one opposed it, and three were neutral.

The Service has reviewed all of the written comments received during both comment periods. Some specific comments were received pertaining to the three taxa (*Dudleya blochmaniae* ssp. *insularis*, *Dudleya* sp. nov. "East Point," and *Heuchera maxima*) being withdrawn in a separate **Federal Register** notice published concurrently with this rule. These comments were incorporated into the notice of withdrawal. General comments received on all 16 taxa included in the proposed rule are addressed here. Several comments dealt with matters of opinion or legal history that were not relevant to the listing decision. Several commenters provided additional information that, along with other clarifications, has been incorporated into the "Background" or "Summary of Factors" sections of this final rule. Opposing and technical comments on the rule have been organized into specific issues. These issues and the Service's response to each issue are summarized as follows:

Issue 1: One commenter asserted that the proposed action would result in a taking of private property, that the Vail and Vickers' rights to graze on Santa Rosa Island would be compromised, and that the Service must consider the economic impact, including the cost of purchasing the remaining portion of the 25 year lease, if the plants are listed.

Service Response: Santa Rosa Island has been the property of the United States Government since its acquisition in 1986. The National Park and Recreation Act of 1978, as amended (16 U.S.C. 410ff-1(d)(1)) states that the owner of a property acquired for a National Park may retain the right of use and occupancy of all or a portion of such property as the owner may elect. The warranty deed of sale between the Federal government and Vail and Vickers specifies a right reserving to the grantors (Vail) the right of the residential use and occupancy for a period of 25 years under the terms and conditions set forth in Exhibit "A." The reserved premises were defined in Exhibit "A" as three rectangular areas, including the ranch house, totaling 3 ha (7.6 ac) that shall be used only for non-commercial residential purposes (NPS 1987). The conditions of 16 U.S.C. 410-1(d)(2) state that any property to which a right of use and occupancy was not reserved by the former owner may be leased by the Secretary at the request of the former owner so long as the use of the property is compatible with the administration of the park and with the preservation of the resources therein. No lease agreement exists between Vail and

Vickers and the NPS, and no grazing rights were retained by the grantors in the deed of sale or in any documents or communications provided to the Service by the NPS. Grazing has been allowed through the issuance of discretionary renewable 5-year Special Use Permits that are separate and distinct from the conditions of sale. Uner 16 U.S.C. 410-1(d)(1), the Secretary was allowed to tender to the prior owner the amount equal to the fair market value of that portion which remains unexpired for only the lands in the area specified in the conditions of use and occupancy. The specified conditions of use and occupancy will not be affected by this listing action.

In addition, under section 4(b)(1)(A) of the Act, a listing determination must be based solely on the best scientific and commercial data available about whether a species meets the Act's definition of a threatened or endangered species. The legislative history of this provision clearly states the intent of Congress to "ensure" that listing decisions are "based solely on biological criteria and to prevent non-biological considerations from affecting such decisions," H. R. Rep. No. 97-835, 97th Cong. 2d Sess. 19 (1982). As further stated in the legislative history, "Applying economic criteria * * * to any phase of the species listing process is applying economics to the determinations made under section 4 of the Act and is specifically rejected by the inclusion of the word "solely" in this legislation," H. R. Rep. No. 97-835, 97th Cong. 2d Sess. 19 (1982). Because the Service is precluded from considering economic impacts in a final decision on a proposed listing, the Service has not examined such impacts.

Issue 2: One commenter stated that the proposed listing action during the listing moratorium was illegal.

Service Response: The listing moratorium prohibited the Service from funding any actions for final listing determinations. It did not affect the preparation and publication of proposed rules. The Service adhered strictly to the conditions of the moratorium and ceased related listing activity once the proposed rule process was finished.

Issue 3: Two commenters stated that the Service did not give proper credence to data presented by ranchers, other land managers, and experts and that the Service gave more weight to information provided by California Native Plant Society volunteers.

Service Response: Starting in 1992, the Service requested from the public, in writing and in meetings, information on the status of the plants and any data that would assist the Service in making

a determination in this action. All data provided prior to and during the public comment periods or in the public meetings were included in the analysis to prepare the proposed rule and this final rule. The Service is not aware of any field data collected by the California Native Plant Society.

Issue 4: Two commenters stated that abrupt termination of livestock grazing would be extremely harmful to the ecosystems and plant communities of Santa Rosa Island, specifically by increasing the potential for weed invasion.

Service Response: The Service has never advocated and is not proposing the abrupt termination of livestock grazing on Santa Rosa Island. A Conservation Strategy Team (Team) composed of Service, NPS, and BRD biologists have prepared a Conservation Strategy for Santa Rosa Island that recommends a gradual reduction of cattle and horses, with total removal by 2011, the expiration date of the reserved right of use and occupancy (Coonan *et al.* 1996). Santa Rosa Island has the smallest proportion of weed species to native species ratio of any of the Channel Islands and the NPS has been actively managing the aggressive invasive aliens. Santa Rosa Island has 98 non-native plants and Santa Cruz Island has 170 non-native plants (Junak 1996). The life history and reproductive characteristics of the weedy species on Santa Rosa Island are adaptations that allow them to take advantage of freshly disturbed sites, such as those that are created by the current domestic livestock management on the island. Surveys conducted by the NPS show that the weed distribution corresponds with the areas that have the highest cattle use. It was the conclusion of the Team that the removal of the non-native grazers and browsers (including deer and elk) from the island would decrease the amount of open habitat available for weed invasion and would therefore result in a decline in weed numbers (Coonan *et al.* 1996). An additional benefit to the island ecosystem from the reduction and eventual elimination of grazing and browsing is that shrub would reoccupy the introduced grasslands that are artificially maintained by current grazing practices (Coonan *et al.* 1996).

Issue 5: One commenter claimed that the proposed rule seemed to imply that all grazing is overgrazing. The commenter objected to the statement that "the ultimate control on population sizes for livestock on islands has been starvation" and asserted that the rule characterized cattle grazing as a disease or predation rather than utilization.

Service Response: The Service did not refer to all grazing as overgrazing. Grazing during drought conditions has resulted in severe damage to the native vegetation and could be considered overgrazing, especially when livestock starvation has occurred. Such events are described and documented in the "Background" section of this rule.

The listing provisions of the Act provide that a species may be determined to be endangered or threatened species due to one or more of the five factors described in section 4(a)(1) of the Act. One of the factors is "Disease or Predation" and the Service normally addresses the effects of herbivory by any animal, including livestock, in the discussion of this factor.

Issue 6: One commenter stated that there was a lack of evidence of the relationship between grazing and the plants in question.

Service Response: The Service has used over 100 references in preparing the final rule. Three levels of information are available: (i) An extensive body of literature on the impacts of non-native mammals to insular vegetation and plant species, (ii) the results of long-term vegetation monitoring by the NPS, and, (iii) specific observations on specific plants, e.g., deer and elk impacts to *Castilleja mollis* and others cited in the "Factors Affecting the Species" section of this rule. This rule also cites information concerning how the condition of the habitat upon which these species depend has been degraded by grazing and browsing.

In addition, international conservation biologists familiar with island biology recognized the damage that non-native mammals cause to insular biota when the Society for Conservation Biology unanimously passed a resolution to promote the elimination of non-native mammals from all of the islands off the coast of western North America (Tershy *et al.* 1994).

Issue 7: One commenter was concerned that the rule stated that increased sedimentation resulted from livestock grazing but that current sedimentation rates were not presented.

Service Response: Data on current sedimentation rates has been added to the rule. A sediment and pollen analysis has documented both the increase in sedimentation and the type conversion of habitat from brush to grass since grazing was introduced to the island. The current sedimentation level is an order of magnitude greater than that prior to the introduction of grazing. Please see the Factor A discussion

under the "Factors Affecting the Species" section for further details.

Issue 8: One commenter stated that an existing range management plan was designed to protect resources and that the Service claimed that the range management plan currently in use for Santa Rosa Island "does not address protection of the proposed taxa."

Service Response: The Service maintains that the range management plan does not address protection of the proposed taxa. Although the plan suggests that monitoring and studies should occur, the Service does not consider potential or actual studies as a management action that would provide protection for the taxa under consideration.

Issue 9: Two commenters expressed concern that the Service is not proposing critical habitat for the taxa that occur on Santa Rosa Island.

Service Response: The Service has considered the designation of critical habitat for these species and determined that it is not prudent to establish critical habitat. Because of the few, small populations of each of the species on Federal land, any determination of adverse modification would also result in jeopardy. Thus, the establishment of critical habitat would provide no additional benefit over that of the jeopardy standard contained in section 7 (a)(2) of the Act. Please see the "Critical Habitat" section of this rule for further information.

Issue 10: One commenter suggested that the listing of these species will severely limit management options.

Service Response: The Service believes that an array of management options are available to the NPS that are consistent with NPS regulations, policy, and guidelines.

Issue 11: One commenter raised the concern that the Service was required to comply with the National Environmental Policy Act (NEPA) and must also prepare a Takings Implication Assessment, as directed by Presidential Executive Order 12630, before issuing a final rule.

Service Response: NEPA is addressed under the section entitled "National Environmental Policy Act" in this rule, as it was in the proposed rule. The Attorney General has issued guidelines to the Department of the Interior (Interior) on implementing Executive Order 12630 (Governmental Actions and Interference with Constitutionally Protected Property Rights). Under these guidelines, a special rule applies when an agency within Interior is required by law to act without exercising its usual discretion, that is, to act solely upon specified criteria that leave the agency

no choice. In the present context, the Service's action cannot consider economic information in reaching a listing decision.

In such cases, the Attorney General's guidelines state that Taking Implications Assessments (TIAs) shall be prepared after, rather than before, the agency makes the decision in which its discretion is restricted. The urpose of the TIAs in these special circumstances is to inform policy makers of areas where unavoidable taking exposures exist. Such TIAs must not be considered in the making of administrative decisions that must, by law, be made without regard to their economic impact. In enacting the Endangered Species Act, Congress required that listings be based solely on scientific and commercial data showing whether or not the species are in danger of extinction. Thus, by law and by U.S. Attorney General guidelines, the Service is forbidden to conduct TIAs prior to listing.

Issue 12: One commenter indicated that the Service must undertake a more comprehensive study of the proposed taxa on Santa Rosa Island.

Service Response: Section 4(b)(1)(A) of the Act requires that a listing determination on whether a species meets the Act's definition of a threatened or endangered species be based on the best scientific and commercial data available. The Service has considered all available information regarding the past, present, and future threats faced by the taxa in this rule, including that submitted during the public comment periods, in making this listing determination.

Issue 13: Two commenters inquired about the justification for a second public comment period. One commenter stated that the Service did not have the statutory authority to consider comments and information after the statutory deadline for issuing a final determination on the proposed plants. One commenter suggested that the *Service should have published a more detailed account of the new information.*

Service Response: The processing of this final rule follows the Service's listing priority guidance published in the **Federal Register** on December 5, 1996 (61 FR 64475). The processing of a final listing is a Tier 2 action under this guidance (61 FR 64479). The Service explained in the **Federal Register** notification for reopening of the comment period that there was significant new information regarding the status of several of the taxa under consideration for listing that may affect the determination of their listing. The

Congressional moratorium on funding for final rule determinations prevented the Service from conforming to statutory deadlines. The **Federal Register** notice provided an opportunity for the public to request any information that would assist them in preparing a response. The Service is obligated to consider the best available scientific and commercial evidence in deciding whether to list a species.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that *Arabis hoffmannii* (Munz) Rollins, *Arctostaphylos confertiflora* Eastw., *Berberis pinnata* Lag. ssp. *insularis* Munz, *Castilleja mollis* Pennell, *Galium buxifolium* Greene, *Gilia tenuiflora* Benth. ssp. *hoffmannii* (Eastw.) A.D. Grant & V.E. Grant, *Malacothamnus fasciculatus* (Torr. & A.Gray) Greene ssp. *nesioticus* (B.L. Rob. in A. Gray) Kearney, *Malacothrix indecora* Greene, *Malacothrix squalida* Greene, *Phacelia insularis* Munz var. *insularis*, and *Thysanocarpus conchuliferus* Greene should be classified as endangered species, and that *Dudleya nesiotica* Moran and *Helianthemum greenei* B.L. Rob. in A. Gray should be classified as threatened species. Section 4 of the Endangered Species Act (16 U.S.C. 1531 *et seq.*) and regulations (50 CFR part 424) promulgated to implement the listing provisions of the Act set forth the procedures for adding species to the Federal lists. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1).

These factors and their application to the 13 plant taxa in this rule are as follows:

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

The primary threat to the species included in this rule is the ongoing loss of soils, because the soils are the foundation for the unique island ecosystems and their endemic species. A significant increase in the rate of soil loss resulting in substantial alterations of the natural habitats of these species began with the introduction of non-native sheep, goat, cattle, deer, elk, bison, and pigs on the various islands in the early 1800's. Soil erosion continues to this day at a rate that remains an order of magnitude greater than that prior to the introduction of alien mammals (Cole and Liu 1994). Soil loss is a significant threat to most existing

populations of, and precludes seedling establishment for, *Arabis hoffmannii*, *Arctostaphylos confertiflora*, *Berberis pinnata* ssp. *insularis*, *Castilleja mollis*, *Dudleya nesiotica*, *Galium buxifolium*, *Gilia tenuiflora* ssp. *hoffmannii*, *Helianthemum greenei*, *Malacothamnus fasciculatus* ssp. *nesioticus*, *Malacothrix indecora*, *Malacothrix squalida*, *Phacelia insularis* var. *insularis*, and *Thysanocarpus conchuliferus*.

The deep incision of many canyons on Santa Rosa Island illustrates the dramatic loss of sediment and, by inference, entire riparian systems that are virtually absent from the island. These incised arroyos cut into fine-grained alluvium built up by thousands of years of deposition, and those incisions and the sedimentation have left a quantitative record of the shift in geomorphic regimes resulting from large herbivores denuding the landscape that continues today (Cole and Liu 1994).

The increased loss of soils and the consequent changes in vegetation due to the introduction of alien mammals have been documented from sediment and pollen records in a soil core dating back 5,200 years from the Old Ranch Canyon marsh on eastern Santa Rosa Island (Cole and Liu 1994). Rates of sedimentation prior to the introduction of livestock averaged 0.7 mm/year (yr) (0.035 in/yr), increased to 23 mm/yr (0.9 in/yr) during the peak sheep grazing era, and now average 13.4 mm/yr (0.13 in/yr), 19 times greater than that prior to grazing (Cole and Liu 1994).

Pollen records demonstrate that the conversion of brushland to grassland occurred with the onset of ranching in the early 1800's. This change in vegetation is reflected by an increased abundance of grass pollen and a decrease in pollen from the mint and pea families in the soil core (Cole and Liu 1994). Coastal sage scrub is dominated by sage species (mint family), lupines and deervetch (pea family). Shallow rooted non-native grasses now dominate the island and are much less efficient as slope stabilizers than the deep-rooted native shrubs they have replaced.

Continued grazing has prevented the ability of the shrub species to recover and reestablish their function as an important source of erosion control. Large sediment loads remain a significant problem as illustrated by the recent attempts to stabilize soils at Johnson's Lee on the south side of Santa Rosa Island, where rice straw wattles placed along hillside contours trapped large volumes of sediment after only one season of rain (Sellgren 1994).

A comparison of historical descriptions of island vegetation with

current conditions also indicates that large-scale habitat alterations caused by large numbers of non-native mammals on the islands resulted in significant loss of soils as well as changes in the structure, composition, and richness of plant communities. In 1883, Thompson and West described the effects of sheep grazing on Santa Cruz Island—"The island becomes at some times overstocked, and may be said to be in that condition much of the time. The result is that the grasses, being cropped so close, die out, and allow the loosened soil to be removed by wind and rain" (Hochberg *et al.* 1980a). At that time, however, vegetation elsewhere on the island was still relatively intact; Greene described mixed forests of large-leaved maple (*Acer macrophyllum*), live oak (*Quercus agrifolia*), black cottonwood (*Populus trichocarpa*), and willow (*Salix laevigata*) thriving in the canyons (Hochberg *et al.* 1980a). Another account was given by Delphine Adelaide Caire in 1933, who reflected on the conditions of Santa Cruz Island—"Its present natural beauty does not come up to that of the past. The bed of the stream that skirts the Main Ranch on its way from Picacho Diablo was much narrower than it is today; mountain slopes were heavily wooded and centuries-old oaks were numerous. In the course of years, rains have accomplished their ruinous work, carrying off a great amount of topsoil, the innumerable trails cut by sharp sheep trotters having been a contributing factor in such devastation" (Hochberg *et al.* 1980a). The historic and current presence of non-native herbivores and pigs has reduced leaf litter and compacted and degraded the soil structure, resulting in accelerated rates of erosion (Klinger *et al.* 1994, Nishida 1994).

The importance of soils in maintaining habitat for the taxa is found not only in their physical properties, but in their biotic properties as well. Healthy soils provide habitat for a complex assemblage of soil organisms, including fragile microbial components, that assist in such processes as water-holding capacity, soil fertility, and nutrient cycling. These processes have been adversely affected by the activities of alien mammals. For instance, the loss of leaf litter from trampling and rooting changes soil temperatures, increases the loss of moisture, reduces the humus layers, and results in a reduced soil fauna (Bennett 1993). Breakdown of organic material, transport of fungal spores, and nutrient recycling by soil mites have all been documented on Santa Catalina Island (Bennett 1993).

Soil mite diversity decreased with increased disturbance, and resulted in impoverished nutrient levels in the soil (Bennett 1993). A feature of arid land soils, such as those in the islands, is the presence of a cyanobacterial-lichen crust that facilitates stabilization of steep slopes and nutrient cycling (Belnap 1994). These crusts are extremely brittle during the dry summer months and can be eliminated by the shattering influences of trampling by non-native herbivores (Belnap 1994). Mycorrhizal associations are likely to occur with most of the species in this rule, and may have been damaged and therefore function at reduced efficiencies (Painter *in litt.* 1997). Such associations function as extensions of the root system and are of particular importance to arid land plant species such as those in this rule. Damaged mycorrhizal associations reduce the health and vigor of their host species.

The large herds of grazing animals that shatter the crustal integrity of the soil surface also result in dust coating the foliage of all the native vegetation. Dust negatively affects plants by reducing photosynthesis, respiration, transpiration, and complicating pollination efficiency (Painter *in litt.* 1997). Intense winds blow from the northwest that can be highly erosive. When the integrity of the natural habitat is disturbed there is an accelerated rate of erosion above that which would result from just rain alone. No opportunity for leaf litter or soil to accumulate exists on the exposed ridge tops with continual non-native animal disturbance (Clark *et al.* 1990).

Even after the agents that initiated erosion have been removed, loss of soils continues (Clark *et al.* 1990, Halvorson 1993). Because both the biotic and physical properties of the soils have been degraded or lost altogether, the soils that remain behind provide poor conditions for seedlings to germinate and establish. On Santa Rosa Island, a grove of island oaks (*Quercus tomentella*), a species of special concern, has shown few signs of regeneration on soils severely affected by erosion even after an enclosure was built to eliminate cattle, elk, and deer (Danielsen 1989a, 1989b). The zone below an *Arabis hoffmannii* population on Santa Rosa Island is inhospitable to seed germination because of cattle trampling and soil churning (McEachern and Wilken 1996). Seed rain from that population falls onto areas that are highly trampled and churned eliminating any chance for population expansion from its precarious cliff location. *Arabis hoffmannii* is monocarpic and damage from trampling

may delay flowering, or even preclude reproduction of trampled individuals. Flowers produced later in the season out of synchrony with pollinator activity results in lower seed productivity (Painter *in litt.* 1997).

Wherever shrubs of *Arctostaphylos confertiflora* have been browsed to form a canopy, the understory is heavily trampled by deer and elk and the bedrock is eroding away around the roots (McEachern 1996, McEachern and Wilken 1996). The soil from around the roots of *Berberis pinnata* ssp. *insularis* on Santa Rosa Island, *Dudleya nesiotica* on Santa Cruz Island, and *Malacothamnus fasciculatus* ssp. *nesioticus* on Santa Cruz Island, is actively eroding (Wilken *in litt.* 1997). *Dudleya nesiotica* plants at Fraser Point on Santa Cruz Island were observed to have been preferentially rooted by pigs in 1995 and 1996 (Painter *in litt.* 1997, McEachern 1996, Wilken 1996). In 1993, when perhaps as much as 20 percent of the Carrington Point populations of *Castilleja mollis* was consumed by deer, individual plants were excavated, leaving depressions in the sandy soils where plants had been observed 5 months earlier (Sarah Chaney, NPS, pers. comm. 1993). More recently researchers have documented that both deer and elk are damaging both populations of *Castilleja mollis* (McEachern 1996). *Galium buxifolium* is threatened on Santa Cruz Island where trampling and pig rooting along the seacliffs increases the likelihood of slope failure (Hochberg *et al.* 1980). Unfenced portions of *Gilia tenuiflora* ssp. *hoffmannii* on Santa Rosa Island are areas where cattle concentrate and churn the soil (Painter *in litt.* 1997). All *Helianthemum greenei* habitat is damaged from rooting by pigs on Santa Cruz Island (Wilken *in litt.* 1997). The recent discovery of *Malacothrix indecora* on Santa Rosa Island included the observation that the prehistoric midden that the plants were growing on was being eroded from damage by livestock (Painter *in litt.* 1997).

Seabirds occur in historic habitat for *Malacothrix indecora* on San Miguel Island and its offshore islet Prince Island, and known sites for *Malacothrix squalida* on Anacapa Island. Many of these bird species experienced severe population declines in the late 1960's and early 1970's as a result of DDT-related reproductive failures (Ingram 1992). However, monitoring results indicate that populations of most of these birds have increased over the past decade. Seabirds use local vegetation to construct nests on cliff and blufftop sites, create localized soil disturbances that facilitate establishment of alien

plant species, and promote erosion of coastal bluffs. Seabird activity has been noted on Middle Anacapa Island within habitat for *Malacothrix squalida* (S. Junak, pers. comm. 1994). The extent to which such localized disturbance has affected this plant species is unknown.

Compaction of soils and crushing of plants by vehicle traffic is an ongoing threat to *Gilia tenuiflora* ssp. *hoffmannii*. The largest population of *Gilia tenuiflora* ssp. *hoffmannii* is bisected by a road. Another road continues to damage habitat and plants along the fence line established to protect the western snowy plover; however, the proposed closure of Old Ranch Pasture to cattle and horses will remove the necessity to maintain a fence at that location (NPS 1997).

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Unrestricted collecting for scientific or horticultural purposes and excessive visits by individuals interested in seeing rare plants constitutes a potential threat to certain of the taxa in this rule. In particular, the collection of whole plants or reproductive parts of those annual or herbaceous perennial taxa with fewer than 100 individuals, including *Arabis hoffmannii*, *Berberis pinnata* ssp. *insularis*, *Malacothamnus fasciculatus* var. *nesioticus*, *Malacothrix indecora*, *Malacothrix squalida*, and *Thysanocarpus conchuliferus*, could adversely affect the genetic viability and survival of those taxa. In the horticultural trade, *Dudleya* species have, in particular, been favorite collection items. *Dudleya nesiotica*, though not in the trade, has been cultivated by *Dudleya* enthusiasts. The limited distribution of this taxon, combined with the additional threats from non-native annuals and pig rooting, makes it vulnerable to such enthusiasts who want the rare species from the wild.

C. Disease or predation

Diseases are not specifically known to threaten any of the taxa included in this rule. All of the taxa included in this proposal, with the exception of *Berberis pinnata* ssp. *insularis*, have populations that are subject to predation by one or more non-native mammals. Apparently, the roots of *Berberis* species are often toxic (Williams 1993), making consumption by feral pigs unlikely. Island endemic plant species lack defensive attributes as protection from grazing and browsing. The impact of this predation to the overall status varies by species, with predation posing the most significance to those with the

fewest and most accessible populations. Current research on Santa Cruz Island has compared similar species from the mainland and from the island in livestock feeding preferences. Livestock consistently preferred the island plants and the study showed that all mainland plants possessed at least one protective characteristic in higher quantity than the similar island taxa, the quantity of spines being the most notable quality. The researcher stated that "[i]sland plants possessed reduced levels of chemical defenses, morphological defenses, or both, and were more vulnerable to herbivory" (Bowen *in litt.* 1997).

Historical records document that overgrazing by sheep in the late 1800's and early 1900's highly degraded the vegetation of Santa Rosa Island. The records also point out that sheep died of starvation due to drought on the island during this time. During a later drought in 1948, the island was so overgrazed that it made the local news, stating that "[h]ardly a sprig of green is to be seen. The tiny tufts of grass that have escaped the hungry mouths of the herd are stunted and dead. Shrubs have perished. [There were] * * * starved looking valley elk * * * [and] * * * prickly pears were gnawed down to the earth." (Ainsworth 1948). Drought in the late 1980's decimated the elk population (Vail and Vickers *in litt.* 1996). Herbivory by non-native herbivores continues to threaten and effectively arrest recovery of the native vegetation and perpetuate the dominance of non-native grasses and herbs. Native island plants evolved in the absence of grazing and browsing and suffer from reduced productivity and lower reproductive success due to the presence of alien herbivores.

In 1875, when sheep stocking on Santa Cruz Island was around 50,000 head, botanist J.T. Rothrock reported that the island was so overgrazed that "it was with difficulty that I could get even a decent botanical specimen" (Hobbs 1983). Although sheep grazing has been removed as a current threat on all but eastern Santa Cruz Island, the decades of overgrazing by sheep have reduced the reproductive capabilities and distribution of many of the taxa included in this rule. A review of literature pertinent to effects of sheep on island vegetation is included in Hochberg *et al.* (1980a). In addition, feral pigs, feral goats, feral sheep, deer, elk, horses, and bison currently occur in habitats that support some populations of all of the taxa included in this rule. The effects of defoliation on plants include decreased above ground biomass, fewer stems, lowered seed

production, reduced height of leaves and stems, decreased root biomass, reduced root length, decreased carbohydrate reserves, and reduced vigor (Heady in Willoughby 1986).

Clark *et al.* (1990) noted that most individuals of *Arctostaphylos confertiflora* are browsed severely by elk and deer. During a recent population survey it was observed that more than 90 percent of all individuals of *Arctostaphylos confertiflora* were accessible to ungulates and were browsed at the growing tips (McEachern and Wilken 1996). The shape of individual shrubs has been modified as a result of browsing. Short-statured shrubs have been hedged to the point that they do not grow above a certain height. On shrubs that attained a taller stature before browsing pressure became severe, all lower limbs and leaves have been stripped, resulting in a "lollipop" or tree-shaped shrub. Browsing pressure on this species appears to have affected its ability to reproduce, since not a single seedling was observed during a 1988 survey (Ronilee Clark, California Park Service, pers. comm., 1988). This species does not have a root crown burl that allows some mainland species to tolerate low levels of defoliation, and, without protection from non-native mammals, continued recruitment failure and reduced vigor may prove catastrophic for this species. This condition was noted in a 1989 letter to Dr. Peter Raven from the leading authority on the genus *Arctostaphylos*, Dr. Phillip Wells, who expressed his concern that the time remaining for the grazing operation would precipitate the extinction of *Arctostaphylos confertiflora* if some protection from non-native mammals was not implemented (Painter *in litt.*, 1997).

Specific examples of browsing or grazing by alien mammals on other taxa in this rule have been observed, including *Arabis hoffmannii*, *Castilleja mollis*, *Dudleya nesiotica*, *Gilia tenuiflora* ssp. *hoffmannii*, *Helianthemum greenei*, and *Thysanocarpus conchuliferus* (Hochberg *et al.* 1980b, McEachern and Wilken 1996, Wilken 1996, Painter *in litt.* 1997).

Grazing can completely eliminate plants and prevent the supplement of seed to the seed bank. Of the six collections of *Gilia* in the herbarium at the Santa Barbara Botanic Garden, only the two collections made during April 1941 show no signs of browsing. The remaining four collections were made between the months of May and June between 1963 and 1978, and all show signs of having been browsed (Rutherford and Thomas, *in litt.* 1994). In 1993, Thomas visited one *Gilia*

population twice. During the first visit in April, the *Gilia* had not been browsed, but by the second visit in May, the *Gilia* had been browsed (Thomas, *in litt.* 1993). In response to such browsing, the annual *Gilia* forms multiple side branches, and although a branched plant may produce a greater number of flowers, this does not necessarily increase the fecundity of the plant (Painter and Belsky 1993). Flowers produced later in the season out of synchrony with pollinator activity results in lower seed productivity (Painter *in litt.* 1977).

The Nature Conservancy has been monitoring population sizes for *Arabis hoffmannii* on Santa Cruz Island since 1990. In 1993, only 19 individuals were observed in the Centinela population; this represented a net loss of 13 individuals from the previous year, with mortality of nine of those plants "directly attributed to pig rooting" (Klinger 1994a).

D. The Inadequacy of Existing Regulatory Mechanisms

Under the Native Plant Protection Act (sec. 1900 *et seq.* of the Fish and Game Code) and the California Endangered Species Act (sec. 2050 *et seq.*), the California Fish and Game Commission has listed *Dudleya nesiotica* and *Galium buxifolium* as rare and *Berberis pinnata* ssp. *insularis* and *Malacothamnus fasciculatus* ssp. *nesiotica* as endangered. The remaining taxa included in this listing proposal are on List 1B of the California Native Plant Society's Inventory (Smith and Berg 1988), indicating that, in accordance with sec. 1901, chapter 10 of the California Department of Fish and Game Code, they are eligible for State listing. Both the Native Plant Protection Act and the California Endangered Species Act prohibit the "take" of State-listed plants on private and State lands, except under permit (sec. 1908 and sec. 2080 of the Fish and Game Code). Privately owned lands that support populations of the taxa in this rule include most of Santa Cruz Island, 90 percent of which is owned by TNC; the remaining 10 percent is owned jointly by NPS. On Santa Catalina Island, habitat for *Helianthemum greenei* occurs on land managed by the Catalina Conservancy, a private conservancy owned by the Catalina Island Company. In general, these State regulatory mechanisms would not likely be invoked, because major changes in land use, such as development projects, are not likely to be proposed on these properties.

The California Fish and Game Commission (Commission) also regulates hunting on private and public

lands by issuing permits for the take of a specified number of animals and taking measures to manage herd sizes. The Commission issues permits for deer hunting on Santa Catalina Island. In 1993, the Commission issued 300 tags for deer hunting on the island. Pigs are considered livestock if they are fenced or marked, but considered wild game if they are unfenced and unmarked. The Catalina Island Company has entered into a memorandum of understanding (MOU) with CDFG to allow eradication of feral pigs on Catalina Island (Mayer, pers. comm. 1994). A similar MOU between CDFG and TNC exists for the removal of pigs from Santa Cruz Island. Bison, which occur on Santa Catalina Island, are considered livestock and therefore not regulated by any agency. Apparently, the Commission has no regulatory authority over hunting or herd size of deer and elk on Santa Rosa Island, because these ungulates were originally transported there under a game breeder's permit in the early 1900's.

Several Federal laws, Interior policies, and NPS policies and guidelines apply to the management of NPS lands. These laws and guidelines include the NEPA, the Endangered Species Act, NPS guidelines for natural resources management (NPS 1991), and the NPS Statement for Management (NPS 1985). The 1980 Congressional legislation enabling purchase of Santa Rosa Island as a national park from the Vail and Vickers Company stated that the owner "may retain for himself a right of use and occupancy of all or such portion of the property as the owner may elect for a definite term of not more than twenty-five years, or ending at the death of the owner, or his spouse, whichever is later. The owner shall elect the term to be reserved. Any such right retained pursuant to this subsection with respect to any property shall be subject to termination by the Secretary upon his determination that such property is being used for any purpose which is incompatible with the administration of the park, or with the preservation of the resources therein, and it shall terminate by operation of law upon notification by the Secretary to the holder of the right of such determination and tendering to him the amount equal to the fair market value of that portion which remains unexpired." (Pub. L. 96-199, 94 Stat. 67, March 5, 1980). The legislation also directed the Secretary to complete a natural resources study within 2 years that would supply an inventory of all terrestrial and marine species, indicating their population dynamics, and probable trends as to future

numbers and welfare, and to recommend action that should be adopted to better protect the natural resources of the park.

Under the conditions of the deed of sale, the former owners, the Vail and Vickers Company, chose only to retain the rights to occupy 3.0 ha (7.6 ac) (NPS 1986). The NPS issues Special Use Permits for 5-year terms for grazing and hunting. The first Special Use Permit issued to Vail and Vickers Company included a condition that a range management plan be developed within 5 years. A range management plan was adopted when the NPS issued the second special use permit. The plan, however, does not address protection of the taxa in this rule (USFWS 1991, 1992, 1993).

In a recent review of the range management plan, the Service found that measuring residual dry matter, the identified means of determining appropriate stocking rates, is inadequate to monitor other important indicators of ecosystem health, including composition and diversity of species, and the condition of plant species of special concern (USFWS 1993). The monitoring of sensitive resources within grazed areas is commonly recommended (NPS 1991, Ruyle 1987, Willoughby 1986), but in this case has not been included in the range management plan. Currently, the condition of the vegetation on Santa Rosa Island is monitored by assessing the residual dry matter of grassland vegetation, which is composed primarily of non-native species (NPS 1993, NPS 1996).

The NPS has prepared a Resource Management Plan (Plan) for Santa Rosa Island to address water quality and rare plants (NPS 1997). The successful implementation of the Plan will be evaluated on a yearly basis to determine the effects on the species in this rule that occur on Santa Rosa Island. While reducing grazing and browsing, the preferred action will allow impacts to continue to *Arctostaphylos confertiflora*, *Castilleja mollis*, *Gilia tenuiflora* ssp. *hoffmannii*, *Malacothrix indecora*, and *Phacelia insularis* ssp. *insularis* and in historic habitat for *Arabis hoffmannii*, *Berberis pinnata* ssp. *insularis* and *Helianthemum greenii*.

San Miguel Island and adjacent Prince Island (a small islet) are under the jurisdiction of the Department of the Navy (Navy), but NPS assists in the management of natural, historic, and scientific values of San Miguel Island through a memorandum of agreement (MOA) originally signed in 1963, an amendment to this MOA signed in 1976, and a supplemental Interagency Agreement (IA) signed in 1985. The

MOA states that the "paramount use of the islands and their environs shall be for the purpose of a missile test range, and all activities conducted by or in behalf of the Department of the Interior on such islands, shall recognize the priority of such use" (Department of the Navy 1963). In addition to San Miguel Island, four other islands including Anacapa, Santa Barbara, Santa Cruz, and Santa Rosa lie wholly within the Navy's Pacific Missile Test Center (PMTTC) Sea Test Range. The 1985 IA provides for the PMTTC to have access and use of portions of those islands, for expeditious processing of any necessary permits by NPS, and for mitigation of damage of park resources from any such activity (Department of the Navy 1985). Should the Navy no longer require use of the islands, NPS would seek authorization for the islands to be preserved and protected as units within the NPS system (Department of the Navy 1976). To date, conflicts concerning protection of sensitive resources on San Miguel Island have not occurred. Protection and management for the three taxa in this rule that occur on the island, *Galium buxifolium*, *Malacothrix squalida*, and *Phacelia insularis* ssp. *insularis*, have not been addressed, leaving in question which agency has ultimate responsibility to do so.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Over 180 non-native plant species have been documented from the northern island group, and the disruption of native habitats and displacement of native species by alien plants is a major concern for natural resource managers on the islands (Hochberg *et al.* 1979, Halvorson *et al.* 1987). Numerous aggressive non-native plants, including Australian fireweed (*Erechtites glomerata*), iceplants (*Carpobrotus* spp., *Mesembryanthemum* spp.), thistles (*Centaurea* spp., *Cirsium* spp., *Silybum* sp.), German-ivy (*Senecio mikanoides*), hoary cress (*Cardaria draba*), and Russian thistle (*Salsola tragus*) pose threats to most of the taxa addressed in this rule.

Fennel (*Foeniculum vulgare*) has become widespread since the removal of cattle and sheep from Santa Cruz Island. Fennel was noticed as a pest species prior to the removal of sheep as reported in Hobbs (1983). Sheep kept the plant from growing to its full height of 2 m (6 ft), and since their removal the plant has "appeared" over large areas of the island. When it is not grazed and cropped close to the ground, its bright green foliage and bright yellow flowers are very conspicuous. Several papers

were presented at a recent symposium on techniques to control fennel (Brenton and Klinger 1994, Dash and Gliessman 1994, Gliessman 1994). If left unchecked, fennel completely dominates the habitats it occupies to the exclusion of all other species. This dominance may be facilitated by a chemical that prevents other species from competing for occupied sites (Gliessman 1994).

Incidental introductions of seed to the Channel Islands occur continually from wind-blown seed from the mainland, introductions from restocking of non-native animals, and seed carried on vehicles and in construction materials. Deliberate introductions of seed have also occurred as during the 1960's, when one pilot reported scattering bags of commercial wildflower and grass seed on most of the northern Channel Islands (Rutherford, *in litt.* 1994). When new introductions and established seed sources occur in areas with disturbance resulting from grazing, browsing, and rooting by non-native mammals, the invasive species can dominate the site. Over the past decade there has been an increasing trend in the numbers of non-native plants invading the Channel Islands. Santa Rosa Island has experienced the least increase in percentage of weed species to native flora ratio of any of the Channel Islands with a 2 percent increase to 20 percent (Junak *et al.* 1995). Santa Cruz Island has at least 170 non-native plants recorded and Santa Rosa Island has 98 non-natives (Junak *et al.* 1995). These invasive species have a high probability of preventing recruitment and causing habitat displacement of *Arabis hoffmannii*, *Castilleja mollis*, *Dudleya nesiotica*, *Galium buxifolium*, *Helianthemum greenii*, *Malacothamnus fasciculatus* var. *nesioticus*, *Malacothrix indecora*, *Malacothrix squalida*, *Phacelia insularis* ssp. *insularis*, and *Thysanocarpus conchuliferus*.

Many of the known pollinators on the islands are ground-nesting insects (Miller 1985, Miller and Davis 1985). *Gilia tenuiflora* has been reported to be pollinated by a ground nesting bee fly (*Oligodranes* sp.) (Grant and Grant 1965). The habitat of these ground-nesting insects has been and is being degraded by trampling and serious loss of soils to active erosion on all of the islands.

The few, small and isolated populations with few individuals of most of these taxa increase the potential for their extinction from random events. One of the species in this rule, *Dudleya nesiotica*, is known from single a population. Seven other taxa in this rule, *Arabis hoffmannii*, *Berberis*

pinnata ssp. *insularis*, *Castilleja mollis*, *Gilia tenuiflora* ssp. *hoffmannii*, *Malacothamnus fasciculatus* ssp. *nesioticus*, *Malacothrix indecora*, and *Phacelia insularis* ssp. *insularis*, are known from only two to five populations. Although recent surveys were conducted for *Malacothrix squalida* and *Thysanocarpus conchuliferus* (S. Junak, pers. comm. 1994, Wilken *in litt.* 1997), and they have not been seen in over five years, the Service believes these species are still likely to be extant because all historic locations have not been recently visited.

Species with few populations and individuals are subject to the threat of random events causing extinction in several ways. First, the loss of genetic diversity may decrease a species' ability to maintain fitness within the environment, often manifested in depressed reproductive vigor. From genetic analyses conducted for the two populations of *Malacothamnus fasciculatus* var. *nesioticus*, (Swenson *et al.* 1995), it was concluded that the three genotypes represented in each of the two populations "probably represent only a portion of the diversity once present in var. *nesioticus*." Elisens (1994) documented reduced levels of genetic diversity in *Galvesia speciosa*, a Channel Islands endemic species of special concern, and noted that the levels were "likely the result of decreased population sizes initiated by human activities and herbivore introductions."

Secondly, species with few populations or individuals may be subject to forces that affect their ability to complete their life cycle successfully. *Arctostaphylos confertiflora*, provides an excellent example of this type of threat. The only remaining individuals of this species are of moderate to old age, and establishment of new individuals is completely lacking (McEachern 1996, McEachern and Wilken 1996, Wilken *in litt.* 1997). The effects of browsing animals on critical portions of its life cycle has resulted in the inability of *Arctostaphylos confertiflora* to establish new individuals to replenish its population. The degree of pollination success for manzanita flowers is unknown, but the abundance of alien grazing and browsing animals has likely depressed the number of native pollinators available to the native plants. Even if pollination occurs and results in successful fruiting, the fruits are eaten by browsing animals. Seed banks are absent due to severe soil loss (McEachern and Wilken 1996). If the fruits escape predation and seeds do

germinate, the seedlings are either trampled or eaten by those same animals. Most of the species in this rule that occur on Santa Rosa, Santa Cruz, and Santa Catalina Islands are likely to be similarly affected. For *Berberis pinnata* ssp. *insularis* the conspicuous lack of recruitment from seeds likely represents a threat to its long-term survival (Wilken 1996). During the 1995-1996 life history study for *Arabis hoffmannii* there were only 11 plants that produced seed in three populations (Wilken *in litt.* 1997).

Thirdly, random natural events, such as storms, drought, fire, or landslides, could destroy a significant percentage of a species' individuals, or the only known extant population. *Arabis hoffmannii*, *Galium buxifolium*, and *Thysanocarpus conchuliferus* are examples of species that could sustain losses of individuals and populations through landslides and soil sloughing as a result of storm events. If a fire were to burn through the *Arctostaphylos confertiflora* populations in its current condition with a highly reduced seed bank, the species would likely go extinct.

In summary, random events can affect species on three different levels: through loss of genetic diversity, through chance events in survival and reproduction, and through catastrophic events. When numbers of populations and individuals reach critically low levels, more than one of these three types of processes may combine to cause extinction. For instance, a species with low reproductive success due to grazing or browsing pressure during a critical portion of its life cycle may subsequently be subject to a severe drought or storm that eliminates the remaining individuals or populations. Such random events increase the vulnerability of all of the taxa in this rule.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by these taxa in determining to make this rule final. Based on this evaluation, the Service finds that *Arabis hoffmannii*, *Arctostaphylos confertiflora*, *Berberis pinnata* ssp. *insularis*, *Castilleja mollis*, *Galium buxifolium*, *Gilia tenuiflora* ssp. *hoffmannii*, *Malacothamnus fasciculatus* ssp. *nesioticus*, *Malacothrix indecora*, *Malacothrix squalida*, *Phacelia insularis* ssp. *insularis*, and *Thysanocarpus conchuliferus* meet the definition of endangered species under the Act. Threats to these 11 taxa include soil loss, habitat alteration by mammals alien to the Channel Islands (pigs, goats, sheep, donkeys, cattle, deer, elk, horses,

bison) and herbivory by these same alien mammals, habitat alteration by native seabirds, habitat alteration due to vehicular traffic, and competition with alien plant taxa. The 11 taxa also have an increased vulnerability to extinction due to reduced genetic viability, depressed reproductive vigor, and random events resulting from few, small and isolated populations with few individuals. Because these 11 taxa are in danger of extinction throughout all or a significant portion of their ranges, they fit the definition of endangered as defined in the Act.

For the reasons discussed below, the Service finds that *Dudleya nesiotica* and *Helianthemum greenei* are likely to become endangered in the foreseeable future throughout all or a significant portion of their range. Since the time the proposed rule was published, more accurate information on the population status of *Dudleya nesiotica* has become available indicating that there are considerably more individuals than previously understood and that the species occupies a larger area than previously known. An estimated 30,000 to 60,000 individuals are now known to occur within an area of 13 ha (32 ac) (Wilken *in litt.* 1997). While the species remains vulnerable to soil loss, rooting from pig activity, and the possibility of random events, the Service now believes that the species is not in immediate danger of extinction. *Helianthemum greenei* has been found to have substantially larger population sizes than were previously known in areas that burned in 1994, with a minimum estimate of between 500 and 1,000 individuals at each of four locations (Wilken *in litt.* 1997). There are now 14 known locations for this taxon with an estimated total of over 3,000 individuals. While the species remains vulnerable to loss of soil, pig rooting, altered fire frequencies and intensities, and the possibility of random events, the species is not in immediate danger of extinction. The Service finds that *Dudleya nesiotica* and *Helianthemum greenei* meet the definition of threatened species under the Act. Critical habitat is not being proposed for these taxa for reasons discussed in the "Critical Habitat" section of this proposal.

Critical Habitat

Critical habitat is defined by section 3 of the Act as: (i) the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require

special management considerations or protection and; (ii) specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. "Conservation" means the use of all methods and procedures needed to bring any protected species to the point at which the measures provided pursuant to the Act are no longer necessary (50 CFR 424.02(c)).

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12) require that, to the maximum extent prudent and determinable, the Secretary specify critical habitat at the time a species is proposed for listing. The Service finds that designation of critical habitat is not prudent for *Arabis hoffmannii*, *Arctostaphylos confertiflora*, *Berberis pinnata* ssp. *insularis*, *Castilleja mollis*, *Dudleya nesiotica*, *Galium buxifolium*, *Gilia tenuiflora* ssp. *hoffmannii*, *Helianthemum greenei*, *Malacothamnus fasciculatus* ssp. *nesioticus*, *Malacothrix indecora*, *Malacothrix squalida*, *Phacelia insularis* ssp. *insularis*, and *Thysanocarpus conchuliferus* at this time. Service regulations (50 CFR 424.12(a)(1)) state that designation of critical habitat is not prudent when one or both of the following situations exist: (1) the species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of such threat to the species, or (2) such designation of critical habitat would not be beneficial to the species.

Critical habitat designation for *Arabis hoffmannii*, *Arctostaphylos confertiflora*, *Berberis pinnata* ssp. *insularis*, *Castilleja mollis*, *Dudleya nesiotica*, *Galium buxifolium*, *Gilia tenuiflora* ssp. *hoffmannii*, *Helianthemum greenei*, *Malacothamnus fasciculatus* ssp. *nesioticus*, *Malacothrix indecora*, *Malacothrix squalida*, *Phacelia insularis* ssp. *insularis*, and *Thysanocarpus conchuliferus* is not prudent due to lack of benefit. *Dudleya nesiotica*, *Helianthemum greenei*, *Malacothamnus fasciculatus* ssp. *nesioticus*, and *Thysanocarpus conchuliferus* all occur on private lands where there is unlikely to be any need for Federal involvement under section 7 of the Act. *Arabis hoffmannii*, *Arctostaphylos confertiflora*, *Berberis pinnata* ssp. *insularis*, *Castilleja mollis*, *Galium buxifolium*, *Gilia tenuiflora* ssp. *hoffmannii*, *Malacothrix indecora*, *Malacothrix squalida*, and *Phacelia insularis* ssp. *insularis* all either have fewer than 100 individuals or fewer than four populations and any action that would adversely modify occupied

or suitable habitat that might be considered critical habitat would also jeopardize the species. Therefore, the designation of critical habitat would not provide any benefit to the conservation of the species beyond that afforded by listing.

The NPS, the Department of Defense (DOD), TNC, and other pertinent parties have been notified of the location and importance of protecting these species' habitats. Protection of these species' habitats will be addressed through the development of a conservation agreement with the Park, the recovery process, and through the section 7 consultation process as a result of listing these species. The Service believes that effects of Federal involvement in the areas where these plants occur can be identified without the designation of critical habitat. The Service finds that designation of critical habitat for these plants is not prudent at this time, because such designation would not increase the degree of protection to the species beyond the protection afforded by listing.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. The protection required of Federal agencies and the prohibitions against certain activities involving listed plants are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is listed as endangered or threatened and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

The NPS has developed a Resources Management Plan and Environmental

Impact Statement (EIS) for improvement of water quality and conservation of rare species and their habitats on Santa Rosa Island in response to a Cleanup and Abatement Order, issued by the Central Coast Regional Water Quality Control Board and the proposed listing of the 16 plants from the Northern Channel Islands. The implementation of the Plan is intended to improve the status of the plants in this rule; due to natural variability in population sizes of the annual plants in this rule, however, any evaluation of the success of implementation will require at least three years to evaluate. For more long-lived species, even an accurate assessment of survivorship to reproductive maturity may take considerably longer.

The Service and NPS have been cooperating to develop a conservation agreement (CA) in accordance with an MOU among several Federal land-managing agencies to cooperate in the conservation of species for which listing may be appropriate (U.S. Department of the Interior 1994). The Service has been working with and advising NPS since at least 1991 including the review of their range management plans effects on the species in this rule. The intent of the CA is to focus on the conservation needs of the plant and animal species of special concern from the northern Channel Islands such that listing for some of those taxa may be avoided. The CA would also serve as a template for the future development of a recovery strategy for the 13 taxa included in this rule.

The Service and NPS signed an MOU in 1995, for the purpose of developing a conservation strategy (CS) that would be included as the basis for a portion of the preferred alternative for the NPS EIS. A team of biologists from three agencies (NPS, Service, and BRD) was assembled to prepare the CS. As a first step in developing a CS for the northern Channel Islands, the conservation team compiled and reviewed available literature and data relevant to these species and their plant communities. Two public meetings were held on September 8, 1994, and January 9, 1995, to gather additional scientific data on the species and their habitats, distributions, and threats. It was agreed that the best strategy for recovery of the species would be a restoration of the ecosystem processes and habitat structures that support them. The NPS selected the CS alternative in the final EIS (NPS 1997).

Of the 13 taxa in this rule, all except *Dudleya nesiotica*, *Malacothamnus fasciculatus* ssp. *nesioticus*, and *Thysanocarpus conchuliferus* have

populations or historical habitat located on Federal lands. Three of the taxa (*Galium buxifolium*, *Malacothrix indecora*, and *Phacelia insularis* ssp. *insularis*) have populations or historical habitat on San Miguel Island, which is owned by the Navy and managed by NPS through a MOA and IA. Navy activities that could potentially affect these taxa and their habitats include military exercises and equipment testing and retrieval carried out under the Executive Order that established the PMTC Sea Test Range, which includes Anacapa, San Miguel, Santa Barbara, Santa Cruz, and Santa Rosa Islands and their environs.

Two of the taxa (*Berberis pinnata* ssp. *insularis* and *Malacothrix squalida*) have populations or historical habitat on Anacapa Island, which is owned and managed by the NPS. Eight of the 13 taxa have populations or historical habitat on Santa Rosa Island, which is owned and managed by the NPS. Three of those eight taxa are single island endemics (*Arctostaphylos confertiflora*, *Castilleja mollis*, *Gilia tenuiflora* ssp. *hoffmannii*). NPS activities that could potentially affect these taxa and their habitats include specific management plans, including those that address expansion of NPS facilities; expansion of visitor services; range management plans, including those that address cattle ranching and deer and elk hunting; alien plant removal programs; and other ecosystem restoration programs, including prescribed fire management. Other activities include the issuing of permits, including Special Use Permits, that authorize continued ranching and hunting operations on Santa Rosa Island. Also included are permits that authorize activities by other agencies or organizations, including rights-of-way to the Department of Commerce to access lighthouse and communication facilities.

As mentioned above, there are three taxa that occur wholly on lands owned and managed by TNC. Future management of Santa Cruz Island may involve NPS as a cooperator, since the island is within National Park boundaries. NPS has already developed a keen interest in the conservation of the taxa in this rule on Santa Cruz Island, and the Service would anticipate coordination with NPS on issues affecting those taxa.

The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to all endangered plants or threatened plants. All prohibitions of section 9(a)(2) of the Act, implemented by 50 CFR 17.61 for endangered plants, and 50 CFR 17.71 for threatened plants, apply.

These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to import or export, transport in interstate or foreign commerce in the course of a commercial activity, sell or offer for sale in interstate or foreign commerce, or remove and reduce the species to possession from areas under Federal jurisdiction. In addition, for plants listed as endangered, the Act prohibits the malicious damage or destruction on areas under Federal jurisdiction and the removal, cutting, digging up, or damaging or destroying of such plants in knowing violation of any State law or regulation, including State criminal trespass law. Certain exceptions to the prohibitions apply to agents of the Service and State conservation agencies.

It is the policy of the Service, published in the **Federal Register** (59 FR 34272) on July 1, 1994, to identify to the maximum extent practicable at the time a species is listed those activities that would or would not be likely to constitute a violation of section 9 of the Act. The intent of this policy is to clarify the potential impacts of a species listing on proposed and ongoing activities within its range. Eight of the 13 taxa in this final rule are known to occur on lands under the jurisdiction of the NPS or DOD; an additional 4 taxa historically occurred on these same Federal lands, and potential habitat may still exist. Collection, damage, or destruction of listed species on these lands is prohibited. However, authorization to incidentally remove or destroy such species on Federal lands may be granted by the Fish and Wildlife Service for any otherwise legal action funded, authorized, or implemented by a Federal agency through section 7 of the Act. The removal and reduction to possession of listed species on Federal lands for research activities may be authorized by the Service under section 10(a)(1)(A) of the Act.

Section 9 of the Act prohibits removal, cutting, digging up, damaging, or destroying endangered plants on Federal or non-Federal lands in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law. As an example, if individuals of an endangered plant species were grazed or trampled by cattle while the livestock were trespassing on either Federal or non-Federal land, a violation of section 9 may exist. However, if the livestock grazing occurred under the authority of a local permit on non-Federal land or under a section 7 consultation on Federal land, section 9 would not be violated. Questions regarding whether

specific activities would constitute a violation of section 9 should be directed to the Field Supervisor of the Service's Ventura Field Office (see ADDRESSES section).

The Act and 50 CFR 17.62 and 17.63 for endangered plants and 50 CFR 17.72 for threatened plants also provide for the issuance of permits to carry out otherwise prohibited activities involving endangered or threatened plants under certain circumstances. Such permits are available for scientific purposes and to enhance the propagation or survival of the species. For threatened plants, permits also are available for botanical or horticultural exhibition, educational purposes, or special purposes consistent with the purposes of the Act. Requests for copies of the regulations regarding listed species and inquiries about prohibitions and permits may be addressed to the U.S. Fish and Wildlife Service, Endangered Species Permits, 911 N.E. 11th Avenue, Portland, Oregon 97232-4181 (telephone 503/231-2063, facsimile 503/231-6243).

National Environmental Policy Act

The Fish and Wildlife Service has determined that Environmental Assessments and Environmental Impact Statements, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

Required Determinations

The Service has examined this regulation under the Paperwork Reduction Act of 1995 and found it to contain no information collection requirements.

References Cited

A complete list of all references cited herein is available upon request from the Ventura Field Office (see ADDRESSES section).

Authors: The primary authors of this final rule are Tim Thomas and Connie

Rutherford, botanists, Ventura Field Office (see ADDRESSES section).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulations Promulgation

Accordingly, the Service amends part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361-1407; 16 U.S.C. 1531-1544; 16 U.S.C. 4201-4245; Pub. L. 99-625, 100 Stat. 3500; unless otherwise noted.

2. Section 17.12(h) is amended by adding the following, in alphabetical order under FLOWERING PLANTS, to the List of Endangered and Threatened Plants to read as follows:

§ 17.12 Endangered and threatened plants.
 * * * * *
 (h) * * *

Species		Historic range	Family	Status	When listed	Critical habitat	Special rules
Scientific name	Common name						
*	*	*	*	*	*	*	*
Flowering Plants							
*	*	*	*	*	*	*	*
<i>Arabis hoffmannii</i>	Hoffman's rockcress	U.S.A. (CA)	Brassicaceae—Musc-tard.	E	623	NA	NA
*	*	*	*	*	*	*	*
<i>Arctostaphylos confertiflora</i> .	Santa Rosa Island manzanita.	U.S.A. (CA)	Ericaceae—Manzanita.	E	623	NA	NA
*	*	*	*	*	*	*	*
<i>Berberis pinnata</i> ssp. insularis.	Island barberry	U.S.A. (CA)	Berberidaceae—Barberry.	E	623	NA	NA
*	*	*	*	*	*	*	*
<i>Castilleja mollis</i>	Soft-leaved Indian paintbrush.	U.S.A. (CA)	Scrophulariaceae—Figwort	E	623	NA	NA
*	*	*	*	*	*	*	*
<i>Dudleya nesiotica</i>	Santa Cruz Island dudleya.	U.S.A. (CA)	Crassulaceae—Stonecrop.	T	623	NA	NA
*	*	*	*	*	*	*	*
<i>Galium buxifolium</i>	Island bedstraw	U.S.A. (CA)	Rubiaceae—Bedstraw.	E	623	NA	NA
*	*	*	*	*	*	*	*
<i>Gilia tenuiflora</i> ssp. hoffmannii.	Hoffmann's gilia	U.S.A. (CA)	Polemoniaceae—Phlox.	E	623	NA	NA
*	*	*	*	*	*	*	*
<i>Helianthemum greenei</i> .	Island rush rose	U.S.A. (CA)	Asteraceae—Aster ..	T	623	NA	NA

Species		Historic range	Family	Status	When listed	Critical habitat	Special rules
Scientific name	Common name						
<i>Malacothamnus fasciculatus</i> ssp. <i>nesioticus</i> .	Santa Cruz Island bush-mallow.	U.S.A. (CA)	Malvaceae—Mallow	E	623	NA	NA
<i>Malacothrix indecora</i>	Santa Cruz Island malacothrix.	U.S.A. (CA)	Asteraceae—Aster ..	E	623	NA	NA
<i>Malacothrix squalida</i>	Island malacothrix ...	U.S.A. (CA)	Asteraceae—Aster ..	E	623	NA	NA
<i>Phacelia insularis</i> ssp. <i>insularis</i> .	Island phacelia	U.S.A. (CA)	Hydrophyllaceae—Waterleaf	E	623	NA	NA
<i>Thysanocarpus conchuliferus</i> .	Santa Cruz Island lacepod.	U.S.A. (CA)	Brassicaceae—Mustard.	E	623	NA	NA

Dated: July 24, 1997
John G. Rogers,
 Director, Fish and Wildlife Service.
 [FR Doc. 97-20133 Filed 7-30-97; 8:45 am]
 BILLING CODE 4310-55-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 679

[Docket No. 961107312-7012-02; I.D. 072597A]

Fisheries of the Exclusive Economic Zone Off Alaska; Species in the Rock Sole/Flathead Sole/"Other Flatfish" Fishery Category by Vessels Using Trawl Gear in Bering Sea and Aleutian Islands

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Closure.

SUMMARY: NMFS is closing directed fishing for species in the rock sole/flathead sole/"other flatfish" fishery category by vessels using trawl gear in the Bering Sea and Aleutian Islands management area (BSAI). This action is necessary to prevent exceeding the 1997 Pacific halibut bycatch allowance specified for the trawl rock sole/flathead sole/"other flatfish" fishery category.

DATES: Effective 1200 hrs, Alaska local time (A.l.t.), July 25, 1997, until 2400 hrs, A.l.t., December 31, 1997.

FOR FURTHER INFORMATION CONTACT: Mary Furuness, 907-586-7228.

SUPPLEMENTARY INFORMATION: The groundfish fishery in the BSAI exclusive economic zone is managed by NMFS according to the Fishery Management Plan for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area (FMP) prepared by the North Pacific Fishery Management Council under authority of the Magnuson-Stevens Fishery Conservation and Management Act. Fishing by U.S. vessels is governed by regulations implementing the FMP at subpart H of 50 CFR part 600 and 50 CFR part 679.

The 1997 halibut bycatch allowance specified for the BSAI trawl rock sole/flathead sole/"other flatfish" fishery category, which is defined at § 679.21(e)(3)(iv)(B)(2), was established by the Final 1997 Harvest Specifications for Groundfish of the BSAI (62 FR 7168, February 18, 1997) as 795 metric tons.

In accordance with § 679.21(e)(7)(iv), the Administrator, Alaska Region, NMFS, has determined that the 1997 Pacific halibut bycatch allowance specified for the trawl rock sole/flathead sole/"other flatfish" fishery in the BSAI has been caught. Consequently, NMFS is closing directed fishing for species in the rock sole/flathead sole/"other flatfish" fishery category by vessels using trawl gear in the BSAI.

Maximum retainable bycatch amounts may be found in the regulations at § 679.20(e) and (f).

Classification

This action responds to the best available information recently obtained from the fishery. It must be implemented immediately to prevent overharvesting the 1997 Pacific halibut bycatch allowance specified for the trawl rock sole/flathead sole/"other flatfish" fishery in the BSAI. Providing prior notice and an opportunity for public comment on this action is impracticable and contrary to public interest. The fleet will soon take the Pacific halibut bycatch allowance specified for the trawl rock sole/flathead sole/"other flatfish" fishery in the BSAI. Further delay would only result in overharvest and disrupt the FMP's objective of allowing incidental catch to be retained throughout the year. NMFS finds for good cause that the implementation of this action cannot be delayed for 30 days. Accordingly, under 5 U.S.C. 553(d), a delay in the effective date is hereby waived.

This action is required by 50 CFR 679.21 and is exempt from review under E.O. 12866.

Authority: 16 U.S.C. 1801 *et seq.*
 Dated: July 25, 1997.

Bruce Morehead,
 Acting Director, Office of Sustainable Fisheries, National Marine Fisheries Service.
 [FR Doc. 97-20097 Filed 7-25-97; 4:44 pm]

BILLING CODE 3510-22-F