
DEPARTMENT OF THE INTERIOR**Fish and Wildlife Service****50 CFR Part 17****RIN 1018-AB88****Endangered and Threatened Wildlife and Plants; Proposed Endangered Status for Ten Plants and Threatened Status for Two Plants From Serpentine Habitats in the San Francisco Bay Region of California****AGENCY:** Fish and Wildlife Service, Interior.**ACTION:** Proposed rule.

SUMMARY: The U.S. Fish and Wildlife Service (Service) proposes endangered status pursuant to the Endangered Species Act of 1973, as amended (Act) for 10 plants: *Castilleja neglecta* (Tiburon paintbrush), *Ceanothus ferrisiae* (coyote ceanothus), *Cirsium fontinale* var. *fontinale* (fountain thistle), *Clarkia franciscana* (Presidio clarkia), *Cordylanthus tenuis* ssp. *capillaris* (Pennell's bird's beak), *Dudleya setchellii* (Santa Clara Valley dudleys), *Eriophyllum latilobum* (San Mateo woolly sunflower), *Pentachaeta bellidiflora* (white-rayed pentachaeta), *Streptanthus albidus* ssp. *albidus* (Metcalf Canyon jewelflower), and *Streptanthus niger* (Tiburon jewelflower). The Service also proposes threatened status for two plants, *Calochortus tiburonensis* (Tiburon mariposa lily) and *Hesperolinon congestum* (Marin dwarf-flax). These species are restricted to serpentine soil outcrops in the area near the San

San Francisco Bay, California. The 12 plants have been affected variously and are threatened by one or more of the following: Urbanization, pedestrian and off-road vehicular traffic, the invasion of alien plants, road maintenance, soil erosion and slipping, unauthorized dumping, livestock grazing, seed predation by beetles, and stochastic extinction by virtue of the small isolated nature of the remaining populations. This proposal, if made final, would implement the Federal protection and recovery provisions afforded by the Act for these plants. The Service seeks data and comments from the public on this proposal.

DATES: Comments from all interested parties must be received by February 12, 1993. Public hearing requests must be received by January 28, 1993.

ADDRESSES: Comments and materials concerning this proposal should be sent to the Field Supervisor, U.S. Fish and Wildlife Service, 2800 Cottage Way, room E-1803, Sacramento, California 95825-1846. Comments and materials received will be available for public inspection, by appointment, during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: Jeanine L. Hardison at 916/978-4866 (see ADDRESSES section).

SUPPLEMENTARY INFORMATION:

Background

Cordylanthus tenuis ssp. *capillaris*, *Calochortus tiburonensis*, *Castilleja neglecta*, *Streptanthus niger*, *Clarkia franciscana*, *Cirsium fontinale* var. *fontinale*, *Eriophyllum latilobum*, *Hesperolinon congestum*, *Pentachaeta bellidiflora*, *Ceanothus ferrisae*, *Dudleya setchellii*, and *Streptanthus albidus* ssp. *albidus* are endemic to serpentine soils in the region of the San Francisco Bay in California. Serpentine soils are derived from ultramafic rocks such as serpentinite, dunite, and peridotite, which are found in discontinuous outcrops in the Sierra Nevada and in the Coast Ranges from Santa Barbara County, California, to British Columbia. The chief constituent of the parent rock is some variant of iron-magnesium silicate. Most serpentine soils are formed in place over the parent rock, and are therefore shallow, rocky, and highly erodible. Serpentine soils also, because of the parent material, tend to have high concentrations of magnesium, chromium, and nickel, and low concentrations of calcium, nitrogen, potassium, and phosphorus (Kruckeberg 1984). These characteristics make serpentine soil inhospitable for the growth of most plants. Nevertheless,

some plants have adapted to the rigors of life on serpentine soils. In fact, serpentine soils often support a high diversity of plants, including many rare species (McCarten 1988). Over 200 taxa in California are endemic (restricted) to serpentine soils (Kruckeberg 1984).

Serpentine soils in the San Francisco Bay region are derived from intrusive igneous rocks associated with fault zones in the sedimentary Franciscan formation. Outcrops occur south of the Bay in the Coyote Valley of Santa Clara County; west of the Bay at Edgewood County Park, near Crystal Springs Reservoir, and at Stanford University's Jasper Ridge Preserve in San Mateo County, and at the Presidio in San Francisco County; east of the Bay in the Oakland hills of Alameda County and at Mt. Diablo in Contra Costa County; and north of the Bay on the Tiburon Peninsula in eastern Marin County and at Mt. Tamalpais, Carson Ridge, and near Nicasio Reservoir in western Marin County, as well as in Sonoma and Napa Counties.

Serpentine soils are variable in soil chemistry, texture, and water availability, both within and between sites (McCarten 1987b). This variability and the variety of micro-climates in the San Francisco Bay region have a profound effect upon the local flora and vegetation. Several serpentine plant communities are found in the San Francisco Bay region (McCarten 1987b). Grassland and annual forb communities (serpentine bunchgrass grassland and serpentine wildflower field) tend to occur on level ground or on gentle slopes with soils to 1 meter (m) (3 feet (ft)) or more in depth. Shrub communities (Franciscan serpentine coastal scrub, mixed serpentine chaparral, and Sargent cypress woodlands) tend to occur on steep rocky slopes with shallow soils. In some areas, soil development is minimal and parent rock is extensively exposed. These serpentine barrens support a distinctive community composed of only a few species, usually growing at low densities. Another unique habitat on serpentine soils occurs near seasonal springs and seeps, which support species requiring moist soil. Most of the 12 species proposed in this rule occur in the serpentine bunchgrass grassland and serpentine wildflower field communities. *Cirsium fontinale* var. *fontinale* occurs in serpentine seep areas. *Cordylanthus tenuis* ssp. *capillaris* and *Ceanothus ferrisae* occur in chaparral, as do a few populations of *Hesperolinon congestum*. *Dudleya setchellii* and *Streptanthus albidus* ssp. *albidus* are found on serpentine barrens. *Eriophyllum latilobum* grows on

serpentine-influenced soil in the coast live oak woodland community.

Serpentine endemics may have limited or widespread distributions. Some species are restricted to a single outcrop; others occur on serpentine soils within a particular region; a few species occur throughout almost the entire range of serpentine soils in California (Kruckeberg 1984). Of the taxa proposed in this rule, one (*Calochortus tiburonensis*) is thought to always have been restricted to the single outcrop on which it occurs. Others, including *Cordylanthus tenuis* ssp. *capillaris*, *Streptanthus niger*, *Eriophyllum latilobum*, *Dudleya setchellii*, and *Streptanthus albidus* ssp. *albidus*, have a known historical range of only a few miles or less. The widest ranging species in historic times was *Pentachaeta bellidiflora*, which occurred from Marin County to Santa Cruz County. It is now restricted to a single population as a result of habitat destruction.

The human population of the San Francisco Bay region has grown rapidly over the last several decades. Urban development (including highway construction) has reduced the amount of serpentine habitat by nearly 20 percent in the past 20 years (McCarten 1987b). The construction of roads, houses, recreational facilities, and waste disposal sites continues. The increasing numbers of people also place an ever greater strain on undeveloped wildlands, through activities such as pedestrian and off-road vehicle traffic, unauthorized garbage dumping, and changes in the pattern of wildland fires. Serpentine habitats, because of their often limited vegetative cover, may appear to the uninitiated as unoccupied space, and so they are especially likely to be subject to disturbances. Recreational activities may directly impact plants; or may result in increased erosion and facilitate the invasion of alien species including many introduced annual grasses common in California. Competition with introduced species is a serious threat to serpentine natives (McCarten 1987b). The destruction of serpentine habitats due to urban development has also increased the fragmentation of rare plant populations, thus increasing the risks of extinction due to chance events such as fire, pest or disease outbreaks, reproductive failure, or other natural or human-caused disaster.

The land that supports these 12 taxa is owned by cities and counties, State and Federal agencies, parks, two water districts and private parties.

Discussion of the Twelve Species Proposed for Listing

North Bay Species

Cordylanthus tenuis ssp. *capillaris* (Pennell's bird's beak) was collected by Herbert Mason about 3 kilometers (km) (2 miles) north of Occidental in Sonoma County, California, in 1946. Francis Whittier Pennell described the plant as *Cordylanthus capillaris* in 1959, using Mason's specimen as the type (Pennell 1950). Pennell was misled by an erroneous label to think that the plants had been collected in Merced County (Bacigalupi 1966), which may have affected his treatment of the taxon (Chuang and Heckard 1986). Artificial hybridization studies of *C. brunneus* and *C. capillaris* (Chuang and Heckard 1975) showed a close relationship between the two plants. The name *C. brunneus* ssp. *capillaris* was proposed for *C. capillaris* by Chuang and Heckard (Heckard 1977) but was never formally published. In 1986 Chuang and Heckard published a revision of the genus, in which both *C. brunneus* and *C. capillaris* were treated as subspecies of *C. tenuis* (Chuang and Heckard 1986).

Cordylanthus tenuis ssp. *capillaris* is a branching herbaceous annual of the snapdragon family (Scrophulariaceae). The plant grows 30–40 centimeters (cm) (12–16 inches (in)) tall, with yellow-green hairless herbage that becomes purplish with age. The leaves are entire, or those of the primary stem three-parted, and threadlike. The floral bracts are three-parted up to two-thirds of their length, with fine marginal hairs on bracts and calyx. The tubular corolla is 1.5 cm (0.6 in) long, and garnet-brown laterally, paler dorsally. Each capsule contains 10–16 seeds. The three-lobed outer bracts of *Cordylanthus tenuis* ssp. *capillaris* distinguish it from its nearest relative (*C. tenuis* ssp. *brunneus*) and from *C. pilosus*, another *Cordylanthus* found in the area. A further distinguishing character is that *C. pilosus* is densely hairy throughout.

Cordylanthus tenuis ssp. *capillaris* is known only from two locations: the type locality in western Sonoma County and a second occurrence a few miles to the west. A third population may occur on property adjacent to the second location, but permission for botanical surveys on that property has been consistently refused (Betty Guggolz, Milo Baker Chapter, California Native Plant Society, pers. comm., 1992). The total number of plants fluctuates from year to year, as is typical of annual plants. *C. tenuis* ssp. *capillaris* is threatened with potential residential development, garbage dumping, and roadside maintenance.

Calochortus tiburonensis (Tiburon mariposa lily) was discovered in 1971 by Robert West on Ring Mountain on the Tiburon Peninsula in Marin County, California. Albert Hill collected the type specimen on Ring Mountain the following year, and published the description in 1973 (Hill 1973).

Calochortus tiburonensis is a bulbous perennial of the lily family (Liliaceae) with a single persistent, basal, linear-oblong leaf 30–60 cm (1–2 ft) long. The flowering stem, about 50 cm (20 in) tall, is usually branched and bears erect flowers in twos or threes at the ends of the branches. The three petals and three sepals are light yellow-green with reddish or purplish-brown markings. The capsule is triangular in cross-section, and about 4 cm (2 in) long. The long slender hairs on the upper surface and margins of the petals and the lack of wings on the capsule distinguish *Calochortus tiburonensis* from the other two *Calochortus* species found on the Tiburon Peninsula, *C. umbellatus* and *C. luteus*.

Calochortus tiburonensis is known only from its type locality, where it grows on rocky serpentine slopes among annual and perennial herbs and grasses. The population, estimated at 40,000 individuals in 1991 (Larry Serpa, The Nature Conservancy, pers. comm., 1992), occurs on land which has been owned and managed by The Nature Conservancy since 1982. The occurrence of this plant in a single population and its proximity to human population centers and intensive development activities renders it vulnerable to catastrophic events such as fire, disease or pest outbreak, severe drought, or other natural or human-caused disasters.

The type specimen of *Castilleja neglecta* (Tiburon paintbrush) was collected by Katherine Brandegeë in the early 1900s. The plant was described by Zeile (1925) in Willis Jepson's *Manual of the Flowering Plants of California*.

Castilleja neglecta is a semi-woody perennial of the snapdragon family (Scrophulariaceae), with erect, branched stems 30–60 cm (1–2 ft) tall and a sparse covering of soft, spreading hairs. The lance-shaped leaves have one or two pairs of narrow lobes. The conspicuous floral bracts are yellowish and sometimes red-tipped; the flowers are yellow to red and 18–20 millimeters (mm) (0.7–0.8 in) long. The simple (unbranched) hairs and the lack of glands below the inflorescence distinguish *C. neglecta* from other species of *Castilleja* on the Tiburon Peninsula (*C. latifolia* var. *rubra* and *C. foliosa*) (Howell 1970).

Castilleja neglecta occurs in serpentine bunchgrass communities on north to west facing slopes. It is known from four populations in Marin County, three of which occur on the Tiburon Peninsula, and one population in Napa County. The range of this plant is approximately 50 km (30 miles) from east to west, and 35 km (22 miles) from north to south. Population sizes are small, ranging from 50 plants at a location in western Marin County (Martin 1991) to 600 plants at Ring Mountain Preserve on the Tiburon Peninsula (Hunter 1989a). A total of approximately 1,500 plants exist. The Marin County populations are threatened by residential development, foot traffic, grazing, and soil slumping; the Napa County population is threatened by gravel mining and grazing.

Streptanthus niger (Tiburon jewelflower) was described by Edward L. Greene, who cited as the type a specimen he had collected at St. Hilary's Church in the town of Tiburon in Marin County (Greene 1886a). Greene later redefined the limits of *Euclisia*, formerly a subgenus of *Streptanthus*, treating it as a genus in its own right (Greene 1904). *Streptanthus niger*, as a member of the *Euclisia* group, was thus referred to as *Euclisia niger*. Jepson (1925) returned *Euclisia* to subsection status, and later authors followed his treatment. Munz treated *S. niger* as a subspecies of *S. glandulosus* in *A California Flora* (1959), and then returned it to *S. niger* in his supplement (1968), following Kruckeberg (1958).

Streptanthus niger is an annual herb of the mustard family (Brassicaceae) that reaches 30–60 cm (1–2 ft) in height. The lower leaves are toothed, the upper leaves less toothed or not at all. The sepals are a very dark purple; the petals have a purple claw and a white blade with a purple midvein. The zig-zag inflorescence pattern and the lack of hairs distinguish *S. niger* from its near relative *S. glandulosus*.

Streptanthus niger is found on shallow rocky serpentine soils on southwest-facing slopes on the Tiburon Peninsula of Marin County. Two populations are known from the southern end of the peninsula where they occur within 3 km (2 miles) of one another. Populations number from 50 to 2,000 plants (Hunter 1989b; Andrew Allen, Belvedere-Tiburon Landmarks Society, *in litt.*, 1991). The plant is threatened by residential development, foot traffic, and road construction.

Central Bay Species

The type specimen of *Clarkia franciscana* (Presidio clarkia) was

collected by Peter Raven in 1956. *C. franciscana* was described by Harlan Lewis and Peter Raven (1958).

Clarkia franciscana is a slender, erect, herbaceous annual of the evening-primrose family (Onagraceae) to 40 cm (16 in) tall with few, very small and narrow leaves. The lavender-pink petals have a lighter basal portion and a reddish-purple basal spot. The slender capsule is 2–4 cm (1–2 in) long. *Clarkia franciscana* can be distinguished from *Clarkia rubicunda*, a related species which may occur in the same area, by the fact that its petals have irregular teeth on the apical margin (*C. rubicunda* has petals that are rounded at the apex).

Clarkia franciscana is restricted to serpentine soils in grassland communities in San Francisco and Alameda Counties. Two populations are known from the Presidio in San Francisco. Three populations are known from the Oakland Hills in Alameda County, 27 km (17 miles) east of San Francisco, and all from within 0.6 miles of each other. A fourth population in the Oakland Hills was reported in 1988 (California Department of Fish and Game, Natural Diversity Data Base), but could not be relocated in a search conducted in 1991 (David Bigham, East Bay Chapter, California Native Plant Society, *in litt.*, 1991). Population sizes fluctuate greatly; the upper limit to the total numbers of plants reported in recent years is approximately 8,000 plants. The first of the Alameda County populations was discovered in 1980 at the Redwood Regional Park. Because this discovery occurred so long after the original discovery of the plant, and because this population was relatively far from the previously known population at the Presidio, it was suggested that this population might not be a natural occurrence. This suggestion gained credence from the fact that seed collected from the type location in 1964 had been sown in the East Bay Regional Parks Tilden Botanic Garden and plants grown there for several years (Roof 1971). Seed collected from plants at the botanic garden had been sown in several sites at the Presidio in 1972 (Roof 1972). It was thought that seed might also have been sown at Redwood Regional Park in Alameda County. However, an electrophoretic comparison of the San Francisco and Alameda populations "strongly suggests that the Oakland Hills population did not originate by seed transfer from San Francisco, and that it must be regarded as indigenous to its present locality" (Gottlieb and Edwards 1992). *C. franciscana* is threatened by potential development, roadside maintenance, foot traffic, mowing, competition from alien plants,

and shade from native and introduced shrubs and trees.

Cirsium fontinale var. *fontinale* (fountain thistle) was first described as *Cnicus fontinalis* (Greene 1886b). In 1892 Greene reassigned the plant to the genus *Carduus* (Greene 1892). Willis Jepson, in his *Flora of Western Middle California* (1901), put the taxon in the genus *Cirsium*. In 1938 John Thomas Howell described a close relative of the fountain thistle, *Cirsium fontinale* var. *obispoense* (Chorro Creek bog thistle) (Howell 1938). According to the rules for botanical nomenclature, when a new variety is described in a species not previously divided into infraspecific taxa, a "type" variety is automatically created. In this case, the type variety is *C. fontinale* var. *fontinale*.

Cirsium fontinale var. *fontinale* is an herbaceous perennial of the aster family (Asteraceae) with several stout, erect reddish stems 30–60 cm (1–2 ft) high. The basal leaves are 10–20 cm (4–8 in) long with spine-tipped lobes; the leaves on the stems are smaller. The flowers are dull white to pinkish, becoming brown with age. The egg-shaped, recurved bracts beneath the flower head distinguish *Cirsium fontinale* var. *fontinale* from the most similar thistle in the area, brownie thistle (*Cirsium quercetorum*). The nearest relative of *C. fontinale* var. *fontinale*, *Cirsium fontinale* var. *obispoense*, is found further south, in San Luis Obispo County.

Cirsium fontinale var. *fontinale* is restricted to perpetually moist clay openings in riparian or serpentine chaparral. Historically, this plant occurred in both San Mateo and Santa Clara Counties, but it is now found in only three locations in San Mateo County. One population of 1,000–2,800 plants occurs east of Crystal Springs Reservoir, on both sides of Interstate 280. A second population of 100–200 plants occurs 10 km (6 miles) to the south in the "Triangle area," a triangular piece of land west of Edgewood County Park, which is bounded by Interstate 280 to the east, Edgewood Road on the north, and Canada Road on the west. A single plant was found in Edgewood County Park in 1987. In 1992, there was still only one plant in this location (Susan Sommers, Santa Clara Valley Chapter, California Native Plant Society, pers. comm., 1992). The taxon is threatened by proposed recreational development, competition with alien plant species, garbage dumping, and roadside maintenance.

Eriophyllum latilobum (San Mateo woolly sunflower) was first collected by Elmer in 1903. The type specimen was

collected by A.A. Heller in 1907. The plant was described by Per Axel Rydberg (1915). *E. latilobum* is believed to have originated as a hybrid between *E. confertiflorum* and *E. lanatum* var. *arachnoideum* (Munz 1959; John Mooring, Santa Clara University, pers. comm. 1992).

Eriophyllum latilobum is a bushy perennial of the aster family (Asteraceae) with leafy stems 30–40 cm (12–16 in) high. The upper surfaces of the deeply three-cleft leaves are a smooth dark green and the lower surfaces are covered with densely interwoven white hairs. The golden flower heads are borne in loose clusters. *E. latilobum* differs from *E. confertiflorum* in having eight ray flowers rather than five, large flower heads, and a more open inflorescence. *E. lanatum* var. *arachnoideum* differs from the other two species in having 13 ray flowers and shallowly cleft leaves.

Eriophyllum latilobum is found in shaded moist sites on steep grassy or sparsely wooded slopes of serpentine-influenced soil. The single remaining occurrence of *E. latilobum* consists of a few hundred plants scattered along 4 km (2.5 miles) of Crystal Springs Road in San Mateo County. These subpopulations are probably the fragments of a once-continuous population. *E. latilobum* has also been reported from southern San Mateo County, on Pescadero Road southwest of La Honda, but this report is most likely erroneous. At least one of the specimens collected at this site (in 1929) is actually *Eriophyllum confertiflorum* (Barry Prigge, University of California, Los Angeles herbarium, pers. comm., 1992), and searches in recent years have found only *Eriophyllum confertiflorum* (Toni Corelli, Santa Clara Valley Chapter, California Native Plant Society, pers. comm., 1992). The plant is threatened by erosion and soil slippage, road maintenance, garbage dumping, and recreational development.

The type specimen of *Hesperolinon congestum* (Marin dwarf-flax) was collected in Marin County by Henry Nicholas Bolander in 1863, while working on the State Geological Survey. Asa Gray described the new species as *Linum congestum*, including it in the section *Hesperolinon* which he described in the same paper (Gray 1865). J.K. Small (1907) established *Hesperolinon* as a distinct genus in 1907. Jepson (1925) treated *Hesperolinon* as a section of the genus *Linum*, and treated *H. congestum* as a subspecies of *L. californicum*. Helen K. Sharsmith (1961) conducted an extensive study of *Hesperolinon* and concluded that it definitely warrants

distinction as a separate genus. She also returned *H. congestum* to the status of a species.

Hesperolinon congestum is an herbaceous annual of the flax family (Linaceae) with slender, threadlike stems, 10–40 cm (4–16 in) tall. The leaves are linear. The flowers are borne in congested clusters; the pedicels are 0.2–2 mm (0.1–0.8 in) long. The sepals are hairy and the five petals are rose to whitish. The anthers are deep pink to purple; this character helps distinguish *H. congestum* from *H. californicum*, found in the same geographic area, which has white to rose anthers, as well as hairless sepals. Two other species that are found in the same region are *H. micranthum* and *H. spergulinum*. They differ from *H. congestum* in having hairless sepals and a long, open inflorescence, with pedicels 2–25 mm (0.8–1 in) long.

Hesperolinon congestum is endemic to serpentine soils from Marin County south to San Mateo County, a range of 80 km (50 miles). Two populations are found in serpentine chaparral; the others occur in serpentine bunchgrass habitat. There are six populations known from Marin County, one from San Francisco County, and seven from San Mateo County. Populations fluctuate in size from hundreds to thousands of plants (Robison and Morey 1992a). The species is threatened by residential and recreational development, foot traffic, and competition from alien species.

Pentachaeta bellidiflora (white-rayed pentachaeta) was first collected in 1853–54 near Corte Madera by John Milton Bigelow, surgeon and botanist for a railway route exploration (Van Horn 1973). The plant was described as *Pentachaeta bellidiflora* (Greene 1885). Keck (1958) transferred the entire genus to *Chaetopappa*. Van Horn (1973) studied *Chaetopappa* and *Pentachaeta* and concluded that the two genera are not closely related. Based on differences in floral and vegetative morphology and chromosome number, Van Horn reinstated the genus *Pentachaeta*.

Pentachaeta bellidiflora is a small annual plant of the aster family (Asteraceae) with one or a few branches that bear narrow, linear leaves. Each flower head has numerous yellow disk florets and 5 to 16 white to purplish ray florets. The fruits are tawny, coarse-haired achenes (dry one-seeded fruits). Related species in the San Francisco Bay area (*P. exilis* ssp. *exilis* and *P. alsinoides*) differ from *P. bellidiflora* in that they have no ray flowers.

Pentachaeta bellidiflora is known only from one location, in a serpentine bunchgrass community in San Mateo

County. Historically, *P. bellidiflora* was known from at least nine sites in Marin, San Mateo, and Santa Cruz Counties. The other populations have been destroyed by urbanization, off-road vehicles, or highway construction over the past 50 years (Robison and Morey 1992b). As is common among annual plants, the size of this population fluctuates dramatically from year to year. Numbers have ranged from 10,000 to just under 100 million in the last 10 years, with about 1.5 million plants growing in each of the last 2 years (Zoe Chandik, Santa Clara Valley Chapter, California Native Plant Society, pers. comm., 1992). The species is threatened by recreational development.

South Bay Species

Ceanothus ferrisae (coyote ceanothus) was collected in 1917 by LeRoy Abrams, professor of botany at Stanford University, on Madrone Springs Road above Coyote Creek, in Santa Clara County. The species was described in 1933 by Howard E. McMinn (McMinn 1933), professor of botany at Mills College and author of *An Illustrated Manual of California Shrubs*.

Ceanothus ferrisae is an erect evergreen shrub of the buckthorn family (Rhamnaceae) that grows 1–2 m (3–6 ft) high, with long stiff divergent branches. Its round leaves are dark green and hairless on the upper surface, lighter green with minute hairs below. The leaf margins have short teeth or sometimes no teeth at all; the leaf base is abruptly tapering or rounded. The small white flowers are borne in clusters 1.3–2.5 cm (0.5–1 in) long. The seed capsules are 7–9 mm (.3–.35 in) in width and have three conspicuous apical horns. The related *C. cuneatus* has entire leaves with wedge-shaped (not rounded) bases and seed capsules only 5–6 mm (.2 in) wide.

Ceanothus ferrisae grows on dry slopes in serpentine chaparral. It is known from only three locations, all within 6 km (4 miles) of each other, in Santa Clara County. Fewer than 6,000 plants are known to exist. It was thought at one time to occur in both San Mateo and Santa Cruz Counties as well, but these reports have been found to be erroneous (Corelli 1991). The existing populations are threatened by residential and recreational development and unauthorized dumping.

The type specimen of *Dudleya setchellii* (Santa Clara Valley dudleya) was collected by Willis L. Jepson in 1896 on Tulare Hill in Santa Clara County. He described it as *Cotyledon laxa* var. *setchellii* (Jepson 1901). At the same time, he described *Cotyledon*

caespitosa var. *paniculata*, which he had collected from Morrison Canyon near what is now Fremont. Britton and Rose (1903) elevated both taxa to full species and transferred them to the newly-created genus *Dudleya*. Subsequently, *Dudleya setchellii* was variously treated as *Cotyledon setchellii* (Fødde 1904), *Echeveria setchellii* (Nelson and Macbride 1913), and *Echeveria laxa* var. *setchellii* (Jepson 1936). Reid Moran (1959) combined the material referred to as *Dudleya setchellii* and *D. paniculata* in *D. cymosa* ssp. *setchellii*. Kei Nakai (1987) separated the two entities into *D. cymosa* ssp. *paniculata* and *D. cymosa* ssp. *setchellii* on the basis of leaf shape, inflorescence branching patterns, and pedicel length. Jim Bartel contends that *D. setchellii* should not be placed within *D. cymosa*, and is in fact intermediate to *D. cymosa* and *D. abramsii* (Jim Bartel, U.S. Fish and Wildlife Service, pers. comm., 1992). His forthcoming treatment of *Dudleya* retains Nakai's *D. cymosa* ssp. *paniculata* and resurrects Britton and Rose's *D. setchellii* for the Santa Clara Valley dudleya (Bartel in press).

Dudleya setchellii is a low-growing perennial of the stonecrop family (Crassulaceae) with fleshy, glabrous leaves. The oblong to triangular, slightly glaucous leaves are 3–8 cm (1–3 in) long and 7–15 mm (0.3–0.6 in) wide. Two or three flowering stems ascend to heights of 5–20 cm (2–8 in) in mid to late spring. The pale yellow petals are 8–13 mm (0.3–0.5 in) long. There are two related species in the area. *D. cymosa* ssp. *cymosa* has bright yellow to red petals rather than pale yellow, and is therefore easily distinguished from *D. setchellii* with its pale yellow flowers. *D. cymosa* ssp. *paniculata* can be distinguished from *D. setchellii* by its oblong to oblanceolate leaves (in contrast to the oblong-triangular leaves of *D. setchellii*), its greater degree of rebranching of the inflorescence branches, and its longer pedicels.

Dudleya setchellii is restricted to rocky outcrops within serpentine grasslands in Santa Clara County. It is found only in the Coyote Valley area, from San Jose south about 30 km (20 miles) to San Martin, at elevations of 100–300 m (300–900 ft). *D. cymosa* ssp. *paniculata* ranges from Contra Costa County to Fresno and Monterey Counties; the reports of Moran's combination *D. cymosa* ssp. *setchellii* from Alameda, Contra Costa, and San Benito Counties (Munz 1959, Olson and Lake 1991) reflect the distribution of *D. cymosa* ssp. *paniculata* and do not refer to *D. setchellii* as now recognized. Fourteen sites and a total of 12,000–13,000 plants are known to exist. The

plant is threatened by development, unauthorized dumping, and off-road vehicles.

Streptanthus albidus ssp. *albidus* (Metcalf Canyon jewelflower) was first collected in 1887 by Volney Rattan, a botany teacher and author of an early California flora, from hillsides a few miles south of San Jose. Edward Greene described *S. albidus* ssp. *albidus* in 1887 (Greene 1887); later he redefined the limits of *Euclisia*, formerly a subgenus of *Streptanthus*, treating it as a genus in its own right (Greene 1904). *S. albidus* ssp. *albidus*, as a member of the *Euclisia* group, was included in this change. Jepson (1925) returned *Euclisia* to subsection status, and later authors followed his treatment. Jepson (1925) also treated *S. albidus* ssp. *albidus* as a subspecies of *S. glandulosus*. Kruckeberg published a revision of the *Streptanthus glandulosus* complex in which he recognized the close relationships among *S. glandulosus*, *S. albidus*, and *S. niger* (Kruckeberg 1958). In this paper he notes that the "sharp genetic discontinuity between *S. albidus* and all other populations, coupled with the morphological distinctness and regional restriction of *S. albidus* warrant the restoration of this Greeneian species." He recognized two subspecies: *S. albidus* ssp. *albidus* and *S. albidus* ssp. *peramoenus* (Kruckeberg 1958).

Streptanthus albidus ssp. *albidus* is an annual herb of the mustard family (Brassicaceae) that reaches up to 1 m (3 ft) in height. It has bristly hairs at the base, and pale green, strongly glaucous stem and leaves. The flowers are borne in leafless terminal racemes. The upper three of the white to yellow to whitish-green sepals are fused, with the lower (fourth) sepal free and spreading. The four petals, 8-11 mm (.3-.4 in) long, are whitish with light purple veins. The erect flattened pods are 3-8 cm (1-3 in) long. The only *Streptanthus* species likely to co-occur with *S. albidus* ssp. *albidus* is its close relative *Streptanthus albidus* ssp. *peramoenus*. *S. albidus* ssp. *peramoenus* is distinguished by its dark purple sepals.

Streptanthus albidus ssp. *albidus* has always been rare. It is endemic to serpentine outcrops with little soil development. It can be locally abundant, but its range is limited, extending less than 30 km (20 miles) from San Jose south to Anderson Lake, which lies northeast of Morgan Hill. Furthermore, the serpentine outcrops on which *S. albidus* ssp. *albidus* occurs are patchily distributed and comprise only a small percentage of the area within its range. Nine populations and a total of 20,000-25,000 plants have been recorded (McCarten 1992b). The plant is

threatened by urbanization and off-road vehicles.

Previous Federal Action

Federal government actions on the 12 plants began as a result of section 12 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.), 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, and included *Cordylanthus tenuis* ssp. *capillaris* (listed as *Cordylanthus brunneus* ssp. *capillaris*), *Calochortus tiburonensis*, *Ceanothus ferrisae*, *Cirsium fontinale* var. *fontinale*, *Clarkia franciscana*, *Hesperolinon congestum*, *Streptanthus albidus* ssp. *albidus*, and *Streptanthus niger* as endangered species and *Castilleja neglecta* and *Eriophyllum latilobum* as threatened taxa. 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. The above 10 taxa were included in the July 1, 1975, notice. As a result of that review, on July 16, 1976, the Service published a proposal in the **Federal Register** (41 FR 24523) to determine approximately 1,700 vascular plant species to be endangered species pursuant to section 4 of the Act. The list of 1,700 plant taxa was assembled on the basis of comments and data received by the Smithsonian Institution and the Service in response to House Document No. 94-51 and the July 1, 1975, **Federal Register** publication. *Calochortus tiburonensis*, *Ceanothus ferrisae*, *Cirsium fontinale* var. *fontinale*, *Clarkia franciscana*, *Cordylanthus tenuis* ssp. *capillaris* (listed as *Cordylanthus brunneus* ssp. *capillaris*), *Hesperolinon congestum*, *Streptanthus albidus* ssp. *albidus*, and *Streptanthus niger* were included in the June 16, 1976, **Federal Register** document.

General comments received in response 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 June 16, 1976, proposal, 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 *Calochortus tiburonensis*, *Castilleja neglecta*, *Ceanothus ferrisae*, *Cirsium fontinale* var. *fontinale*, *Clarkia franciscana*, *Cordylanthus tenuis* ssp. *capillaris*, *Hesperolinon congestum*, *Pentachaeta bellidiflora*, *Streptanthus albidus* ssp. *albidus*, and *Streptanthus niger* as category 1 candidates for Federal listing, and *Eriophyllum latilobum* as a category 2 candidate. Category 1 taxa are those for which the Service has on file substantial information on biological vulnerability and threats to support preparation of listing proposals. Category 2 taxa are those for which data in the Service's possession indicate listing is possibly appropriate, but for which substantial data on biological vulnerability and threats are not currently known or on file to support proposed rules. On November 28, 1983, the Service published in the **Federal Register** a supplement to the Notice of Review (48 FR 39526). This supplement changed *Ceanothus ferrisae*, *Cirsium fontinale* var. *fontinale*, *Pentachaeta bellidiflora*, and *Streptanthus albidus* ssp. *albidus* from category 1 to category 2 candidates.

The plant notice was again revised on September 27, 1985 (50 FR 39526). *Calochortus tiburonensis*, *Castilleja neglecta*, *Clarkia franciscana*, *Eriophyllum latilobum*, *Hesperolinon congestum*, and *Streptanthus niger* were included as category 1 candidates; *Ceanothus ferrisae*, *Cirsium fontinale* var. *fontinale*, *Cordylanthus tenuis* ssp. *capillaris*, *Pentachaeta bellidiflora*, and *Streptanthus albidus* ssp. *albidus* were included as category 2 candidates. Another revision of the plant notice was published on February 21, 1990 (55 FR 6184). In this revision, *Castilleja neglecta*, *Ceanothus ferrisae*, *Cirsium fontinale* var. *fontinale*, *Clarkia franciscana*, *Cordylanthus tenuis* ssp. *capillaris*, *Dudleya setchellii*, *Eriophyllum latilobum*, *Hesperolinon congestum*, *Streptanthus albidus* ssp. *albidus*, and *Streptanthus niger* were included as category 1 candidates; *Calochortus tiburonensis* and *Pentachaeta bellidiflora* were included as category 2 candidates. Since the publication of that notice, additional information was received on *Pentachaeta bellidiflora* that elevated it to category 1 status. The Service also re-evaluated the information available for *Calochortus tiburonensis* and elevated it to category 1 status. The Service

therefore believes that sufficient information is now available to support the proposed listing of these two species.

Section 4(b)(3)(B) of the Endangered Species Act, as amended in 1982, 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 *Calochortus tiburonensis*, *Ceanothus ferrissae*, *Cirsium fontinale* var. *fontinale*, *Clarkia franciscana*, *Cordylanthus tenuis* ssp. *capillaris*, *Hesperolinon congestum*, *Streptanthus albidus* ssp. *albidus*, *Streptanthus niger*, *Castilleja neglecta*, and *Eriophyllum latilobum*, because the 1975 Smithsonian report had been accepted as a petition. On October 13, 1982, 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, 1985, 1986, 1987, 1988, 1989, 1990, and 1991. Publication of this proposal constitutes the final finding for the petitioned action. There are no pending petitions for *Pentachaeta bellidiflora* or *Dudleya setchellii*.

Summary of Factors Affecting the Species

Section 4 of the Endangered Species Act (Act) 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 of threatened and endangered species. 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 *Calochortus tiburonensis* Hill (Tiburon mariposa lily), *Castilleja neglecta* Zeile (Tiburon paintbrush), *Ceanothus ferrissae* McMinn (coyote ceanothus), *Cirsium fontinale* Jeps. var. *fontinale* (fountain thistle), *Clarkia franciscana* Lewis and Raven (Presidio clarkia), *Cordylanthus tenuis* Gray ssp. *capillaris* (Penn.) Chuang and Heck. (Pennell's bird's beak), *Dudleya setchellii* (Santa Clara Valley dudleya), *Eriophyllum latilobum* Rydb. (San Mateo woolly sunflower), *Hesperolinon congestum* (A. Gray) Small (Marin dwarf-flax), *Pentachaeta bellidiflora*

Greene (white-rayed pentachaeta), *Streptanthus albidus* Greene ssp. *albidus* (Metcalf Canyon jewelflower), and *Streptanthus niger* Greene (Tiburon jewelflower) are as follows:

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

The destruction of habitat through residential or recreational development is the greatest threat faced by these species. The plants are limited to serpentine soils. Serpentine outcrops in the San Francisco Bay area are limited; 20 percent of those outcrops have already been eliminated as plant habitat due to development (McCarten 1987b). The pressure to build more houses, roads, and other facilities for humans is great in all the counties under consideration. Serpentine habitats also have been fragmented by the construction of roads such as Interstate 280. Habitat fragmentation increases the risks of extinction due to chance events such as fire, flood, landslide, pest or disease outbreaks, severe drought, or other natural or human-caused disaster.

Cordylanthus tenuis ssp. *capillaris* has never been known from more than the two populations that occur today. Ownership of the type locality is mixed; part of the population occurs on the Harrison Grade Preserve, which is owned and managed by the California Department of Fish and Game. Habitat on the preserve is threatened by unauthorized activities such as off-road vehicle use. Plants on private parcels are threatened with potential development.

The second population of *Cordylanthus tenuis* ssp. *capillaris* occurs on private property a few miles to the west of the type locality. Plans for residential development of this site are currently under review at the Sonoma County Planning Department (Betty Guggolz, pers. comm. 1992). The owner of this property has been working with the California Department of Fish and Game to minimize impacts to the *Cordylanthus tenuis* ssp. *capillaris* (Ann Howald, California Department of Fish and Game, pers. comm., 1992). Plans include the donation of over 40 hectares (ha) (100 acres), including *C. tenuis* ssp. *capillaris* habitat, to the county for use as a park (Betty Guggolz, pers. comm., 1992). This donation may afford protection to part of the second population of *C. tenuis* ssp. *capillaris*, but since the transfer has not yet taken place and no plans have been made for protection of the plant on this new park, the population still should be considered threatened by development.

Calochortus tiburonensis is at present protected from development because the land on which it occurs is owned and managed by The Nature Conservancy, a group whose management goals are the maintenance of biodiversity and the protection of rare and endangered species (Larry Serpa, pers. comm., 1992). The preserve is fenced to reduce the incidence of off-road vehicle use, but the site is still accessible to bicycles, motorbikes, and pedestrians, and it is not patrolled. The proximity of the preserve to residential areas renders it vulnerable to overuse and vandalism. Furthermore, this preserve, being on The Nature Conservancy's list of potential divestitures, will transfer ownership when a suitable organization is found to manage it (Larry Serpa, pers. comm., 1992).

Castilleja neglecta has never been widespread. Three of the five populations occur on the Tiburon Peninsula in Marin County, and one occurs in Napa County. A recently discovered population on the Golden Gate National Recreation Area extends the known range to western Marin County. Each of the three occurrences on the Tiburon Peninsula has multiple landowners. The Nature Conservancy owns over half of the Ring Mountain occurrence and the town of Tiburon owns portions of the occurrence in the Middle Ridge area of the peninsula. The remainder of each of these occurrences is privately-owned. The third occurrence on the peninsula is on private property near St. Hilary's Church in Tiburon. Development on the Tiburon Peninsula is extensive and rapid; over 60 percent of *C. neglecta* habitat has already been destroyed by development (Hunter 1989a). Residential development is ongoing on several parcels of the Middle Ridge occurrence, and proposed for both parcels at the St. Hilary's occurrence. The habitat at both of these sites is also threatened by pedestrian traffic. The plants on Ring Mountain Preserve are protected from development but are threatened by sliding of the slope on which they occur. The toe of the slope was removed to accommodate residential development in the 1960s. Soil material that slides into the street at the base of the slope is removed by the City of Corte Madera, and the slope continues to slump. Managers from The Nature Conservancy estimate that approximately one-third of the population is at risk (Lynn Lozier, pers. comm., 1992). The Napa County population occurs on private property near a gravel quarry. Although quarry expansion plans that would result in the

destruction of more than 80 percent of the population are no longer being actively pursued, the potential for expansion still exists.

Streptanthus niger is an extremely narrowly-distributed species; its entire range amounts to less than one-third of a square mile. Urban development has destroyed over 40 percent of potential *S. niger* habitat (Hunter 1989b). Both of the two known occurrences have multiple landowners. The town of Tiburon owns portions of the occurrence on the Middle Ridge of the peninsula, and the occurrence at St. Hilary's Church in Tiburon is owned in part by the Tiburon Landmark Society. The remainder of each of these two occurrences is privately-owned. Residential development is ongoing at several parcels of the Middle Ridge occurrence, and proposed for both parcels of the St. Hilary's occurrence. Habitat at both of these sites is also threatened by pedestrian traffic.

Clarkia franciscana was once thought to be restricted to the Presidio in San Francisco County, but about 10 years ago a population was discovered in Alameda County in the Oakland hills. The two populations in San Francisco County occur at the Presidio, currently owned by the U.S. Department of Defense. These populations are threatened by habitat degradation. The Army has plans to fence rare plant habitat on the Presidio; at present, however, pedestrian and mountain bicycle traffic on and near casually established "social trails" threatens the habitat. Ownership of the Presidio is expected to be transferred from the Army to the National Park Service within a year. The Presidio represents a significant natural and cultural resource within San Francisco city limits, and is expected to be widely promoted by the Park Service and heavily used by visitors (Terri Thomas, Golden Gate National Recreation Area, pers. comm., 1992). The increase in visitation after transfer to the Park Service will increase the negative impact of traffic on *C. franciscana*.

The three populations of *Clarkia franciscana* in Alameda County are all threatened by alien species (see Factor E). The smallest of the three, consisting of 30 plants (Olson 1991c) occurs on an undeveloped site that bears a sign offering custom-built homes.

One occurrence of *Cirsium fontinale* var. *fontinale* has been reported from Santa Clara County, but the site is thought to have been destroyed by urbanization (Niehaus 1977). The three remaining populations grow in San Mateo County. The largest population occurs to the east of Crystal Springs

Reservoir and north of State Highway 92, along both sides of Interstate 280. It occurs partly on San Francisco Water Department land and partly on a California Department of Transportation right-of-way. Given its proximity to the roadside, it is likely to be affected by any highway projects in the area. Major realignments of Highway 92 were planned several years ago, but the plans have been abandoned due to lack of funding (Richard Vonarb, California Department of Transportation, pers. comm., 1992). They could be revived, however, if funding should become available. At present, a smaller project to widen Highway 92 east of the reservoir causeway is under review. Provision for the removal of water from the increased road surface may adversely affect some of the plants. The California Department of Transportation is aware of the plant locations and vulnerability. The proposed construction of multi-use recreational trails on San Francisco Water Department land presents an additional threat. Trail construction would threaten the plants through direct destruction of the habitat or through modification of hydrologic regimes. Because *C. fontinale* var. *fontinale* is dependent upon seeps and springs to provide abundant soil moisture, any disruption in the flow of water (such as that caused by road, trail, or drain construction) would threaten the plants.

A second and substantially smaller population of *Cirsium fontinale* var. *fontinale* occurs in the "Triangle" west of Interstate 280. One to two hundred plants have been observed on San Francisco Water Department lands; an outlying colony of about 25 plants occurs on an easement held by the California Department of Transportation. This colony occupies a smaller territory in 1992 than it has in previous years (Susan Sommers, pers. comm., 1992). The plants on Water Department land are threatened by proposed trail construction, as discussed for *Hesperolinon congestum*. In addition, a general management plan for the Water Department lands currently is being developed (Ed Stewart, San Francisco Water Department, pers. comm., 1992), which may include the possibility of golf course construction at the Triangle.

The single specimen of *Cirsium fontinale* var. *fontinale* in Edgewood County Park occurs in a drainage ditch beside a trail. Clearing of the ditch to improve or maintain drainage could damage or destroy this plant or any seedlings it may produce.

Eriophyllum latilobum has been reported from only two locations, one of

which is likely erroneous (specimen misidentified, according to Barry Prigge, pers. comm., 1992). The single remaining population consists of about 300 plants that occur along 4 km (2.5 miles) of Crystal Springs Road in San Mateo County. Seventy-five percent of the plants occur within 9 m (30 ft) of the road, where land ownership is poorly defined (McGuire 1992). The City of Hillsborough, the County of San Mateo, and the San Francisco Water Department have varying jurisdictions over the land. The steep slopes along Crystal Springs Road provide a very unstable habitat for *E. latilobum*. The slopes are subject to erosion and soil slippage. After soil slippage occurs, road maintenance crews remove the slumped soil, which may contain mature individuals, seedlings, and/or seeds of the *E. latilobum*. The road cut is then reshaped, which may damage plants remaining on the banks. The proposed construction of the San Mateo Creek Trail (McGuire and Morey 1992) would have adverse impacts on the plant if trail design does not incorporate plant conservation. The paved trail, which is 3 m (10 ft) wide, is expected to run adjacent to Crystal Springs Road from Skyline Boulevard to the San Mateo City boundary. Construction of the trail could damage or eliminate colonies of *E. latilobum*, alter site hydrology, accelerate soil erosion through increased pedestrian and bicycle traffic, and allow for the introduction of aggressive alien plant species.

Fourteen populations of *Hesperolinon congestum* still exist. One Marin County population is protected at The Nature Conservancy's Ring Mountain Preserve. Two relatively small populations occur on land owned by the Marin Municipal Water District. Another small population is found in the Golden Gate National Recreation Area above Nicasio Reservoir. A fifth population occurs in part on a small preserve at St. Hilary's Church, and in part on private land which recently has been proposed for development (Robison and Morey 1992a). The sixth Marin County site is the Middle Ridge area of the Tiburon Peninsula, on which occur a few scattered groups of plants. Some plants grow on land designated as open space by the city of Tiburon. The remainder of the plants occur on private land and are threatened by ongoing or proposed residential development.

One population of *Hesperolinon congestum* is known from San Francisco County. This occurrence is threatened by foot traffic.

In San Mateo County, three populations of *Hesperolinon congestum* are known to occur on private property.

These plants are threatened by proposed development and by the consequences of recently completed development, such as trampling, trash dumping, and changes in hydrology caused by irrigation runoff (Robison and Morey 1992a). Two populations occur on land owned by the San Francisco Water Department. Their habitat is threatened by the proposed construction of trails in the watershed. The construction of these trails and the accompanying fences may damage *Hesperaloe congestum* habitat. Two populations occur at Edgewood County Park and have been threatened by the proposed construction of a golf course at the park. On May 5, 1992, the county board of supervisors voted to declare Edgewood County Park a natural preserve. This designation will provide guidance to park personnel in determining uses of the park, but it has no enforcement provisions, and can be revoked by a vote of the board of supervisors.

Pentachaeta bellidiflora historically ranged from Marin County to Santa Cruz County. Three populations in Marin County and two in San Mateo County were destroyed by urbanization. One Marin County occurrence was destroyed by off-road vehicles. Two sites in Santa Cruz County no longer support *P. bellidiflora* (Robison and Morey 1992b). The single remaining population of *P. bellidiflora* was bisected by the construction of California Interstate 280 in the late 1960s. The largest portion of the population occurs in the Triangle, on land administered by the San Francisco Water Department. A small remnant of this population is located to the east of Interstate 280, on Edgewood County Park. The proposed construction of trails on Water Department land threatens the *P. bellidiflora* habitat.

Ceanothus ferrisiae is known from three populations in Santa Clara County. The largest population, consisting of approximately 5,000 plants, occurs near Anderson Dam, partially on Santa Clara County Park property and partially on private property. The county proposes further recreational development in the park, which could threaten the *Ceanothus ferrisiae* (Chris Nagano, U.S. Fish and Wildlife Service, pers. comm., 1992). An outlying population occurs 3 km (2 miles) west on land leased and managed by a waste management firm. Waste Management, Inc. and The Nature Conservancy jointly funded research on *C. ferrisiae*, which was conducted by the Center for Conservation Biology. Researchers have found that *C. ferrisiae* is relatively easy to propagate from seed, and both Waste Management and the Santa Clara Valley Water District have

been experimenting with the use of *C. ferrisiae* for revegetation projects. The third population, consisting of approximately 500 plants (Corelli 1989) occurs on private land scheduled for development.

Dudleya setchellii always has been restricted to the Coyote Valley area of Santa Clara County. Eleven of the 14 populations are on private land and are subject to various levels of threat due to development. The three northernmost populations, which occur in southeastern San Jose, and the three southernmost populations, which occur in the area around Morgan Hill, are at greatest risk. These areas are developing especially rapidly, and all six sites have been proposed for development at one time or another. Two of the central populations also are threatened with imminent development, including residential development and road construction. One central population, due to its proximity to an off-road motorcycle park, may be threatened by off-road motorcycle traffic and unauthorized dumping. The remaining two populations that occur on private land are on the grounds of the IBM Bailey Avenue laboratory. The company apparently plans to preserve the habitat (McCarten 1992a). Three populations occur on land owned by Santa Clara County. Of these, two populations occur in county parks. The final population occurs on county-owned land that is slated for the construction of a jail and an animal shelter. The county intends to avoid the *D. setchellii* habitat during construction (Kathy Freas, CH2M Hill, pers. comm., 1992), but specific plans have not yet been developed.

The known historical distribution of *Streptanthus albidus* ssp. *albidus* is as restricted as its current distribution. It is found only in the Coyote Valley area of Santa Clara Valley, primarily on the east side of the valley. Of the 13 documented sites, 9 are known to still harbor plants. Two populations are known to have been extirpated, one by the construction of Anderson Dam, and the other as a result of being covered by fill from a housing development. Two occurrences are known from herbarium records only. One of these historical sites was revisited in 1990, but no plants were found. *Streptanthus albidus* ssp. *albidus* was last observed at the other historical site in 1895. The remaining nine populations are threatened by impending or potential development. Two of these populations occur on county property on which the construction of a jail and an animal shelter is proposed. The county intends to avoid the *Streptanthus* habitat during construction (Kathy Freas, pers. comm.,

1992) but specific plans have not yet been developed.

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

Overutilization is not currently known to be a factor for any of the 12 plants, but unrestricted collecting for scientific or horticultural purposes or excessive visits by individuals interested in seeing rare plants could result from increased publicity as a result of this proposal. *Calochortus tiburonensis* is a strikingly unusual member of a much-collected genus *Eriophyllum latilobum*, with its showy golden flowers and proximity to roads and the proposed San Mateo Creek trail, might prove to be especially tempting to collectors. *Dudleya setchellii* is also vulnerable because of the horticultural appeal of succulents and the slow growth of the plants. The remaining plants are usually not spectacular in flower, but may nonetheless appeal to collectors because of their rarity.

C. Disease or Predation

Both horses and deer have been reported to browse on *Cordylanthus tenuis* ssp. *capillaris*, but the number of plants damaged generally appears to be minimal (Lynn Lozier, pers. comm., 1992). Cattle grazing has been reported to threaten the western Marin population of *Castilleja neglecta* (Marin 1991) and a portion of the American Canyon occurrence (Hunter 1989a). Another source suggests, however, that cattle provide little threat to the American Canyon population because the plants occur on a very steep slope (Jake Ruygt, Napa Valley Chapter, California Native Plant Society, pers. comm., 1992).

Seed predation by beetle larvae has been reported for *Cirsium fontinale* var. *fontinale* (Dean Kelch, University of California, Davis, pers. comm., 1992); however, the extent of the impact of this seed predation on *C. fontinale* var. *fontinale* is unknown. Beetle larvae also have been observed in seed heads of *Eriophyllum latilobum* (McGuire and Morey 1992).

D. The Inadequacy of Existing Regulatory Mechanisms

Under the Native Plant Protection Act (Division 2, Chapter 10 section 1900 et seq. of the Fish and Game Code) and California Endangered Species (Division 3, Chapter 1.5 section 2050 et seq.), the California Fish and Game Commission has listed three of these species (*Cirsium fontinale* var. *fontinale*, *Clarkia franciscana*, and *Streptanthus niger*) as endangered, two species (*Calochortus*

tiburonensis and *Castilleja neglecta*) as threatened, and one species (*Cordylanthus tenuis* ssp. *capillaris*) as rare. The California Fish and Game Commission recently voted to list two other species (*Eriophyllum latilobum* and *Pentachaeta bellidiflora*) as endangered, and one species (*Hesperolinon congestum*) as threatened. Although both statutes prohibit the "take" of State-listed plants (Chapter 1.5 section 1908 and Chapter 10 section 2080), State law appears to exempt the taking of such plants via habitat modification or land use change by the landowner. After the California Department of Fish and Game notifies a landowner that a State-listed plant grows on his or her property, State law requires only that the landowner notify the agency "at least ten days in advance of changing the land use to allow salvage of such plant." (Chapter 1.5 section 1913).

The California Environmental Quality Act (CEQA) requires a full public disclosure of the potential environmental impacts of proposed projects. The public agency with primary authority or jurisdiction over the project is designated as the lead agency, and is responsible for conducting a review of the project and consulting with other agencies concerned with resources affected by the project. Section 15065 of the CEQA Guidelines requires a finding of significance if a project has the potential to "reduce the number or restrict the range of a rare or endangered plant or animal." Species that are eligible for listing as rare, threatened, or endangered but are not so listed are given the same protection as those species that are officially listed with the State. Once significant effects are identified, the lead agency has the option to require mitigation for effects through changes in the project or to decide that overriding considerations make mitigation infeasible. In the latter case, projects may be approved that cause significant environmental damage, such as destruction of endangered species or their habitat. The protection of threatened and endangered species through CEQA is therefore dependent upon the good will of the lead agency involved, and in practice statements of overriding considerations are commonly prepared.

Three of the plants occur at Edgewood County Park in San Mateo County, which has recently been designated as a natural preserve. This designation is intended to encourage management for environmental protection, but it can be revoked by a vote of the county board of supervisors, and therefore does not

provide dependable long-term protection for the plants.

Section 404 of the Clean Water Act regulates the placement of dredge and fill materials into waters of the United States (including small acreages above the headwaters of streams). Under section 404, nationwide permits, which undergo minimal public and agency review, can be issued for projects involving less than 10 acres of waters of the United States and adjacent wetlands, unless a listed species may be adversely affected. Individual permits, which are subject to more extensive review, are required for projects that affect greater than 10 acres.

The U.S. Army Corps of Engineers (Corps) is the agency responsible for administering the section 404 programs. The Service, as part of the section 404 review process, provides comments on both pre-discharge notices for nationwide permits and public notices for individual permits. The Service's comments are only advisory, although procedures exist for elevation when disagreements between the agencies arise. In practice, the Corps' actions under section 404 would not adequately protect *Cirsium fontinale* var. *fontinale*, which occurs in riparian serpentine seep areas.

Most projects within the range of *Cirsium fontinale* var. *fontinale* considered in this proposal may require approval from the Corps as currently described in section 404 of the Clean Water Act. Federal listing of this species would ensure greater consideration of the effects of permitted actions during the review process as well as provide the protections of section 7 of the Act.

E. Other Natural of Manmade Factors Affecting its Continued Existence

As discussed in the "Background" section, the large and still increasing numbers of people in the San Francisco Bay area place a great strain on undeveloped wildlands, through activities such as pedestrian and off-road vehicle traffic and unauthorized garbage dumping. Disturbance may directly impact plants; more seriously, it can increase erosion and allow the invasion of alien species such as the many introduced annual grasses common in California. Competition with introduced species is a serious threat to serpentine natives (McCarten 1987b).

Cordylanthus tenuis ssp. *capillaris* growing along roadsides is threatened by roadside maintenance such as mowing and spraying (Lynn Lozier, pers. comm., 1992). Vehicular traffic threatens plants in and near the parking area at the Harrison Grade Reserve,

which is poorly defined and close to the plant population (McCarten 1987a). Unauthorized dumping of large items such as bottles, furniture, appliances, and cut wood is also a threat. Light disturbance at the Harrison Grade Reserve such as infrequent grading of dirt roads appears to increase the number of *C. tenuis* ssp. *capillaris* (Lynn Lozier, The Nature Conservancy, pers. comm., 1992), but higher levels of disturbance may facilitate the invasion of alien species (McCarten 1987a) and result in a decline of *C. tenuis* ssp. *capillaris*.

Calochortus tiburonensis is threatened, by virtue of its occurrence in a single population, with chance events such as fire, severe drought, pest or disease outbreak, landslides, or other natural or human-caused disasters. The proximity of the plant to a large human population increases the likelihood that human-caused disasters or acts of vandalism will affect the plants or their habitat.

Clarkia franciscana is threatened by road maintenance (mowing) at the Presidio. Mowing of grasslands before the *Clarkia franciscana* has set seed also threatens the populations. Populations at the Presidio also are threatened by the encroachment of alien plant species, including *Senecio mikanioides* (German ivy), *Carpobrotus* sp. (iceplant), *Rubus* spp. (blackberries), and by natives planted outside their natural range, such as *Pinus radiata* (Monterey pine) (California Department of Fish and Game 1988). The population size at the type locality increased following removal of alien plant species in the late 1980s. Constant vigilance and effort is needed to prevent reinvasion.

At latest report the largest population of *Clarkia franciscana*, occurring at Redwood Regional Park in Alameda County, consisted of 4,000–5,000 plants (Gottlieb and Edwards 1992, Olson 1991a). The East Bay Regional Park District is aware of the *Clarkia franciscana* population and has been taking it into account in their management plans (Ray Budzinski, East Bay Regional Park District, pers. comm., 1992). The habitat is threatened by competition with annual grasses (Ray Budzinski, pers. comm., 1992) and other alien plants, including *Cortaderia selloana* (pampas grass) and *Cytisus monspessulanus* (French broom) (Olson 1991a). The two smaller populations in Alameda County, consisting of 200 plants (Olson 1991b) and 30 plants (Olson 1991c) respectively, are also threatened by alien species *Cytisus monspessulanus* and *Cortaderia jubatum*. The larger of the two occurs on a roadcut.

The Crystal Springs Reservoir population of *Cirsium fontinale* var. *fontinale* is threatened by several factors, including roadside maintenance. The California Department of Transportation is aware of the rare plants in this area, and the maintenance division submits spraying plans for internal environmental review before spraying in the area where plants are known to occur (Richard Vonarb, pers. comm., 1992). Alien plants such as *Cortaderia seiloana* have established themselves near the *C. fontinale* var. *fontinale*, and threaten several subpopulations (Zoe Chandik, pers. comm., 1992). Dumping of garden debris from households on the ridge above the plants covers plants and renders the habitat unsuitable for plant establishment and growth. It has been suggested that *C. fontinale* var. *fontinale* may be threatened with hybridization with *Cirsium quercetorum*, but only one hybrid has been collected in recent years, so this is not thought to be a serious problem (Dean Kelch, pers. comm., 1992).

Eriophyllum latilobum is threatened by many factors. Dumping of garden debris and downhill seepage of pesticides from homeowners living above the population may have negative impacts on *E. latilobum* habitat. The plant also is threatened by competition with alien plants; its habitat is more densely populated with *Carduus* sp. and *Bromus* sp. than it was 10 years ago (John Mooring, pers. comm., 1992). Road maintenance also threatens *E. latilobum*. Preemergent herbicide is commonly used along the side of the road; drift from herbicide spray may damage those plants close to the road. San Mateo County road maintenance crews were alerted to the existence of *E. latilobum* in 1990, and instructed to avoid the plants by the San Mateo County Planning Department; however, road maintenance activities are not monitored to ensure protection (Roman Gankin, San Mateo County Planning Division, pers. comm. to Teri McGuire, Botanist, California Department of Fish and Game, cited in McGuire and Morey 1992). *E. latilobum* is not a vigorous reproducer; low germination rates and low seedling survival have been observed under greenhouse conditions (John Mooring, *in litt.*, 1992, in McGuire and Morey 1992).

Hesperolinon congestum is threatened by the encroachment of native shrubs in San Francisco County. In San Mateo County all three populations are threatened by trash dumping as a consequence of recently completed development.

Pentachaeta bellidiflora is potentially threatened by competition from alien plant species; this competition becomes a problem when the soils are disturbed (Robison and Morey 1992b).

Ceanothus ferrisae is threatened by unauthorized dumping of litter and larger debris at the Anderson dam site.

Streptanthus albidus ssp. *albidus* is threatened by dumping and off-road motorcycle use. Road maintenance or construction threaten populations that occur on roadcuts. Grazing threatens some other populations.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by these species in determining to propose this rule. These 12 plants are endemic to a very specific habitat that occurs in scattered outcrops. The rapid urban development in the San Francisco Bay region offers the greatest threat to these plants. They are threatened further by the invasion of alien species, roadside maintenance, soil erosion and slipping, garbage dumping, livestock grazing, seed predation, and small population sizes that increase their vulnerability to chance events such as fire, flood, drought, pest and disease outbreaks, and other natural and human-caused disasters. Ten of the 12 are in danger of extinction throughout all or a part of their range, and the preferred action is therefore to list *Castilleja neglecta*, *Ceanothus ferrisae*, *Cirsium fontinale* var. *fontinale*, *Clarkia franciscana*, *Cordylanthus tenuis* ssp. *capillaris*, *Dudleya setchellii*, *Eriophyllum latilobum*, *Pentachaeta bellidiflora*, *Streptanthus albidus* ssp. *albidus*, and *Streptanthus niger* as endangered. Two of the twelve are not now in immediate danger of extinction throughout all or a significant portion of their range. However, given the extremely limited distribution of *Calochortus tiburonensis*, and if appropriate management actions are not taken to protect *Hesperolinon congestum*, these two species are likely to become in danger of extinction in the near future. As a result, the preferred action is to list *Calochortus tiburonensis* and *Hesperolinon congestum* as threatened.

Critical Habitat

Section 4(a)(3) of the Act requires that, to the maximum extent prudent and determinable, the Secretary designate critical habitat concurrently with determining a species to be endangered or threatened. The Service finds that designation of critical habitat is not prudent for these species. Because the 12 plants face numerous anthropogenic threats (see Factors A

and E in "Summary of Factors Affecting the Species") and the 12 occur predominantly on private land, the publication of precise maps and descriptions of critical habitat in the **Federal Register** would make these plants more vulnerable to incidents of vandalism and, therefore, could contribute to the decline of these species and increase enforcement problems. The listing of these species as endangered or threatened also publicizes the rarity of these plants and, thus, can make these plants attractive to researchers or collectors of rare plants. The proper agencies have been notified of the locations and importance of protecting the habitat of these species.

Protection of the habitat of these species will be addressed through the recovery process and through the section 7 jeopardy standard. Therefore, the Service finds that designation of critical habitat for these plants is not prudent at this time, because such designation likely would increase the degree of threat from vandalism, collecting, or other human activities.

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 activities. 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 State and requires that recovery actions be carried out for all listed species. Such actions are initiated by the Service following listing. 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 requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any action that is likely to jeopardize the continued existence of a proposed species or result in destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, 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.

Federal activities potentially affecting one or more of the 12 plants likely will involve recreation-related projects and perhaps grazing practices on Federal land. Populations of 3 of the 12 plants occur on Federal land. Two populations of *Hesperolinon congestum* and one of *Castilleja neglecta* occur on the Golden Gate National Recreation Area. Two populations of *Clarkia franciscana* occur at the Presidio, on land now owned by the Department of Defense and soon to be transferred to the Golden Gate National Recreation Area.

The San Francisco Water Department owns 9,300 ha (23,000 acres) of land in San Mateo County. In 1969, a four-party agreement among the U.S. Department of the Interior, the State of California, San Mateo County, and the City and County of San Francisco established easements on the watershed lands to ensure that all future land use would be compatible with water quality criteria. These easements were granted to the U.S. Department of the Interior and are jointly administered by the San Francisco Water Department and the Golden Gate National Recreational Area. Populations of *Cirsium fontinale* var. *fontinale*, *Eriophyllum latilobum*, *Hesperolinon congestum* and *Pentachaeta bellidiflora* occur on Water Department land.

Hesperolinon congestum, *Pentachaeta bellidiflora*, *Dudleya setchellii*, and *Streptanthus albidus* ssp. *albidus* co-occur with the bay checkerspot butterfly (*Euphydryas editha bayensis*) in San Mateo or Santa Clara counties. The bay checkerspot is listed as a threatened species under the Endangered Species Act. Permits for incidental take of this species granted under section 10(a) of the Act may affect the plant species listed above. Preparation of Habitat Conservation Plans for the Bay checkerspot butterfly may therefore require internal section 7 consultation with regard to the four species listed above.

The 12 plants also may be affected by Federal mortgage programs, including the Veterans Administration and the U.S. Department of Housing and Urban Development (Federal Home Administration loans), or by construction of roads and highways by the Federal Highways Administration. At least one proposed project that may affect two of the plants also involves

wetlands under the jurisdiction of the U.S. Army Corps of Engineers.

Listing these 12 plants would provide for development of a recovery plan (or plans) for them. Such plan(s) would bring together both State and Federal efforts for conservation of the plants. The plan(s) would establish a framework for agencies to coordinate activities and cooperate with each other in conservation efforts. The plan(s) would set recovery priorities and estimate costs of various tasks necessary to accomplish them. They also would describe site-specific management actions necessary to achieve conservation and survival of the 12 serpentine plants.

The Act and its implementing regulations found at 50 CFR 17.61, 17.62, and 17.63 for endangered species and 17.71 and 17.72 for threatened species set forth a series of general prohibitions and exceptions that apply to all endangered or threatened plants. With respect to the 12 plants from San Francisco Bay area serpentine habitats, all trade prohibitions of section 9(a)(2) of the Act, implemented by 50 CFR 17.61 or 17.71, would 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; remove and reduce to possession the species from areas under Federal jurisdiction; maliciously damage or destroy any such species on any area under Federal jurisdiction; or remove, cut, dig up, damage, or destroy any such endangered plant species on any other area in knowing violation of any State law or regulation or in the course of any violation of a State criminal trespass law. Certain exceptions apply to agents of the Service and State conservation agencies. The Act and 50 CFR 17.62, 17.63, and 17.72 also provide for the issuance of permits to carry out otherwise prohibited activities involving endangered or threatened plant species under certain circumstances. The Service anticipates few trade permits would ever be sought or issued for the 12 species because the plants are not common in cultivation or in the wild. Requests for copies of the regulations on listed plants and inquiries regarding them may be addressed to the Office of Management Authority, U.S. Fish and Wildlife Service, 4401 North Fairfax Drive, room 432, Arlington, Virginia 22203-3507 (703/358-2104).

Public Comments Solicited

The Service intends that any final action resulting from this proposal will be as accurate and as effective as possible. Therefore, comments or suggestions from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party concerning this proposed rule are hereby solicited. Comments particularly are sought concerning:

(1) Biological, commercial trade, or other relevant data concerning any threat (or lack thereof) to *Cordylanthus tenuis* ssp. *capillaris*, *Calochortus tiburonensis*, *Castilleja neglecta*, *Streptanthus niger*, *Clarkia franciscana*, *Cirsium fontinale* var. *fontinale*, *Eriophyllum latilobum*, *Hesperolinon congestum*, *Pentachaeta bellidiflora*, *Ceanothus ferrisae*, *Dudleya setchellii*, or *Streptanthus albidus* ssp. *albidus*;

(2) The location of any additional populations of these species and the reasons why any habitat should or should not be determined to be critical habitat as provided by section 4 of the Act;

(3) Additional information concerning the range, distribution, and population size of these species; and

(4) Current or planned activities in the subject area and their possible impacts on these species.

Any final decision on this proposal will take into consideration the comments and any additional information received by the Service, and such communications may lead to a final regulation that differs from this proposal.

The Act provides for a public hearing on this proposal, if requested. Requests must be received within 45 days of the date of publication of the proposal. Such requests must be made in writing and addressed to the Field Supervisor of the Sacramento Field Office (see ADDRESSES section).

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, 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 Act. A notice outlining the Service's reasons for this determination was published in the Federal Register on October 25, 1983 (48 FR 49244).

References Cited

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

Author

The primary author of this proposed rule is Jeanine L. Hardison, U.S. Fish and Wildlife Service, Sacramento Field Office (see ADDRESSES section).

List of Subjects in 50 CFR Part 17

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

Proposed Regulation Promulgation

PART 17—[AMENDED]

Accordingly, it is hereby proposed to amend part 17 subchapter B of Chapter I, title 50 of the Code of Federal Regulations, as set forth below:

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. It is proposed to amend § 17.12(h) by adding the following, in alphabetical order under the families indicated, and by adding a new family "Linaceae—Flax family," in alphabetical order, to the List of Endangered and Threatened Plants:

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

Species		Historic range	Status	When listed	Critical habitat	Special rules
Scientific name	Common name					
Asteraceae—Aster family:						
<i>Cirsium fontinale</i> var. <i>fontinale</i>	Fountain thistle	U.S.A. (CA)	E		NA	NA
<i>Encoryphum latilobum</i>	San Mateo woolly sunflower	U.S.A. (CA)	E		NA	NA
<i>Pentachaeta bellidiflora</i>	White-rayed pentachaeta	U.S.A. (CA)	E		NA	NA
Brassicaceae—Mustard family:						
<i>Streptanthus albidus</i> ssp. <i>albidus</i>	Metcalf Canyon jewelflower	U.S.A. (CA)	E		NA	NA
<i>Streptanthus niger</i>	Tiburon jewelflower	U.S.A. (CA)	E		NA	NA
Crassulaceae—Stonecrop family:						
<i>Dudleya seicheffii</i>	Santa Clara Valley dudleya	U.S.A. (CA)	E		NA	NA
Liliaceae—Lily family:						
<i>Calochortus tiburonensis</i>	Tiburon manposa lily	U.S.A. (CA)	T		NA	NA
Linaceae—Flax family:						
<i>Hesperaloe congestum</i>	Mann dwarf-flax	U.S.A. (CA)	T		NA	NA
Cragraceae—Evening-primrose family:						
<i>Clarkia franciscana</i>	Presidio clarkia	U.S.A. (CA)	E		NA	NA
Rhamnaceae—Buckthorn family:						
<i>Ceanothus fensholtii</i>	Coyote ceanothus	U.S.A. (CA)	E		NA	NA
Scrophulariaceae—Snapdragon family:						
<i>Castilleja neglecta</i>	Tiburon paintbrush	U.S.A. (CA)	E		NA	NA
<i>Cordylanthus tenuis</i> ssp. <i>capillaris</i>	Pennell's bird's beak	U.S.A. (CA)	E		NA	NA

Dated: November 24, 1992.

Richard N. Smith,

Acting Director, Fish and Wildlife Service.

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