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 Two Plants and Proposed Threatened Status for Four Plants From Southern California

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The U.S. Fish and Wildlife Service (Service) proposes to determine endangered status pursuant to the Endangered Species Act of 1973, as amended, (Act) for two plants: *Astragalus brauntonii* (Braunton's milk-vetch) and *Pentachaeta lyonii* (Lyon's pentachaeta); and threatened status for four plants: *Dudleya abramsii* ssp. *parva* (Conejo dudleya), *Dudleya cymosa* ssp. *marcescens* (marcescent dudleya), *Dudleya cymosa* ssp. *ovatifolia* (Santa Monica Mountains dudleya), and *Dudleya verityi* (Verity's dudleya). These taxa occur in grassland, chaparral, or coastal sage scrub habitats in the mountains surrounding the Los Angeles basin, California. The six plants are threatened by one or more of the following: Urban development, recreational activities, alteration of fire cycles, flood control activities, and overcollection. Several of the plants are also threatened with stochastic extinction by virtue of their small numbers and population size. This proposed rule, if made final, would extend the Act's protection to these plants. The Service seeks data and comments from the public on this proposed rule.

DATES: Comments from all interested parties must be received by January 29, 1993. Public hearing requests must be received by January 14, 1993.

ADDRESSES: Comments and materials concerning this proposal should be sent to the U.S. Fish and Wildlife Service, Southern California Field Station, Ventura Field Office, 2140 Eastman Avenue, suite 100, Ventura, California 93003. Comments and materials received will be available for public inspection, by appointment, during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: Constance Rutherford, Ventura Field Office, at the above address (telephone (805) 644-1766 or (818) 904-6040).

SUPPLEMENTARY INFORMATION:

Background

Astragalus brauntonii (Braunton's milk-vetch), *Pentachaeta lyonii* (Lyon's pentachaeta), *Dudleya cymosa* ssp. *marcescens* (marcescent dudleya), *Dudleya cymosa* ssp. *ovatifolia* (Santa Monica Mountains dudleya), *Dudleya abramsii* ssp. *parva* (conejo dudleya), and *Dudleya verityi* (Verity's dudleya) are located around the Los Angeles basin, California. The lowland plains are bounded by mountains and hills that expose Mesozoic or older basement rocks and sedimentary and igneous rocks of late Cretaceous to late Pleistocene age. The southern portion of the Transverse Ranges forms the northern and western boundary of the basin and includes the San Gabriel Mountains, the Santa Monica Mountains, and the Simi Hills. The Santa Ana Mountains at the northern end of the Peninsular Ranges border the southern region of the basin.

Strong substrate preferences are exhibited by all of the species included in this proposal. *Astragalus brauntonii* is only known to occur on small limestone outcrops. *Pentachaeta lyonii* is found on clay soils in ecotonal areas between grasslands and shrublands. All of the dudleyas occur on volcanic or sandstone rock outcrops with specific microhabitat characteristics. *Dudleya verityi* and *Dudleya abramsii* ssp. *parva* occur exclusively on the outcrops and soils derived from the Miocene Conejo volcanics at the western end of the Simi Hills and the Santa Monica Mountains. *Dudleya cymosa* ssp. *marcescens* occupies the lower slopes of volcanic cliffs in canyons that have perennial moisture. *Dudleya cymosa* ssp. *ovatifolia* is found on rock outcrops with forms specific to sedimentary conglomerate or volcanic breccia.

Most of the major habitat types in which these rare plants occur are considered sensitive by the botanical community in California. Large scale loss of habitat, fragmentation, and alteration of natural ecosystem processes of plant communities have resulted from development, cattle grazing, and type conversion by agricultural practices (Schoenherr 1990). *Astragalus brauntonii* is associated with fire-dependent chaparral habitat, dominated by *Adenostoma fasciculatum*, *Yucca whipplei*, the rare *Cupressus forbesii*, and a suggested new species, *Nolina cismontana* (Dice 1988). *Dudleya abramsii* ssp. *parva* commonly occurs in cactus-dominated coastal sage scrub, which provides nesting habitat for the coastal population of the cactus wren (*Campylorhynchus brunneicapillus*), a Federal candidate species. Most of the coastal sage scrub where *Dudleya verityi* occurs is dominated by *Artemisia californica*, *Eriogonum fasciculatum*, *Salvia leucophylla*, and occasionally *Corethrogyne gigantea*. *Dudleya verityi* is associated with *Eriogonum crocatum* and *Dudleya blochmaniae* ssp. *blochmaniae*, both category 2 candidates for Federal listing. A unique lichen flora of over 70 species is associated with *Dudleya verityi* and coastal sage scrub habitat on Conejo Mountain (Riefner 1992). *Niebla cerucheoides*, a small lichen cushion, apparently functions as a "nursery" for seeding establishment for *Dudleya verityi*. The population of *Niebla* on Conejo Mountain is the largest on the mainland (it is also known from the California channel islands). Occurrences of *Niebla* in coastal sage scrub habitats of coastal southern California are being reduced by habitat loss and air pollution (Riefner 1992.) The grassland habitat in which *Pentachaeta lyonii* occurs is largely dominated by introduced old world grass and herb genera such as *Avena*, *Brassica*, *Bromus*, and *Erodium*. Several native plant species such as the native bunch grass *Stipa pulchra* are present in these grasslands.

Astragalus brauntonii was first collected in 1901 by Ernest Braunton near Sherman (now called West Hollywood), Los Angeles County. Samuel B. Parish described it 2 years later as *Astragalus brauntonii* (Abrams 1944). In 1929, Per Axel Rydberg published the name *Brachyphragma brauntonii* in his revision of the genus; however, this name was not commonly recognized by other botanists. Rupert Barneby recognized the name *Astragalus brauntonii* in his Atlas of North American Astragalus (Barneby 1964).

Astragalus brauntonii is a robust, short-lived perennial in the pea family (Fabaceae). It is one of the tallest members of the genus reaching a height of 15 decimeters (dm) (60 inches (in)) and is covered with woolly tomentum

throughout. A thick taproot and woody basal stem gives rise to several to numerous stems. The 4 to 16 centimeter (cm) (1.5 to 6.5 in) long leaves are pinnately compound with 25 to 33 oblong-ovate, abruptly pointed leaflets. The light purple flowers are clustered in 35- to 60-flowered racemes 4 to 14 cm (1.5 to 5.5 in) long. The beaked, slightly curved pods are oblong-ovoid and 6.5 to 9 mm (2.5 to 3.5 in) long. *Astragalus brauntonii* is readily distinguished from the only other perennial species of *Astragalus* in the area, *A. trichopodus*, by being woolly tomentose as opposed to strigose (covered with sharp, stiff-appressed hairs) or glabrous (without hairs) and by the two-chambered, rather than one-chambered pods (CNPS 1979).

Astragalus brauntonii is apparently a limestone endemic; the only locations not found on limestone are down-wash sites (seed drift following a fire event). Limestone outcrops are extremely rare within the limits of the known distribution of *A. brauntonii*; therefore, this taxon was never common or abundant. Fire or other site perturbation is required for the survival of this species. The frequency of fire in the habitat of *A. brauntonii* is probably measured in 20 year intervals (O'Leary 1990). This species has a life span of 2 to 3 years, and, depending on fire interval, a given location is visible only once in 20 to 50 years.

Astragalus brauntonii is currently known from three general areas in Ventura, Los Angeles, and Orange Counties. Several occurrences are found in the Simi Hills of eastern Ventura and western Los Angeles Counties. Two occurrences are known from Santa Ynez Canyon in the Santa Monica Mountains, Los Angeles County. Two occurrences are known from Coal and Gypsum Canyons in the Santa Ana Mountains, Orange County. Historical collections were taken from south of Clamshell Canyon north of Monrovia, and at the type locality (Sherman) in the Santa Monica Mountains. Because reproduction of *A. brauntonii* is stimulated by fire events, the total number of individuals varies with current fire cycles. Since the largest known populations currently comprise 20 to 30 individuals, the current total number of individuals is estimated to be fewer than 300.

Most of the habitat for *Astragalus brauntonii* is on lands in private ownership with active development proposals. Two public agencies, the California Department of Parks and Recreation (DPR) and the Conejo Open Space Conservation Authority (COSCA) have small, marginally viable populations within their jurisdictions. *Astragalus brauntonii* is threatened by urban development, alteration in fire cycles, and stochastic (random) extinction due to small population sizes and/or low numbers of individuals.

The name *Pentachaeta lyonii* (Lyon's pentachaeta) was first published by Asa Gray in 1886 (Van Horn 1973) based on a plant collected by William S. Lyon "near Palos Verdes Mountain" in Los Angeles County. David D. Keck (1958) renamed the plant *Chaetopappa lyonii*, which was subsequently recognized by Munz (1959). *Pentachaeta* is recognized as the accepted genus name based on a monograph on the taxonomic status of *Pentachaeta* and *Chaetopappa*, where morphologic, anatomic, and breeding system comparisons demonstrated that the two genera are not closely related (Van Horn 1973).

Pentachaeta lyonii is a 6 to 48 cm (2.4 to 18.9 in) tall annual member of the aster family (Asteraceae) with yellow flowers, blooming in the late spring (April–June). It is distinguished from other members of the genus by its pubescent phyllaries, larger numbers of pappus bristles, and its reddish branches originating from the upper portion of the plant. The corollas of the ray flowers are typically curled, and the leaves are narrowly linear with ciliate margins.

Pentachaeta lyonii occupies pocket grassland sites that are ecotonal with shrublands, and the edges of roads and trails. Typical species associated with *Pentachaeta* include *Chorizanthe staticoides, Calochortus catalinae, Stipa pulchra*, and annual members of the Phlox family (Thomas and Danielsen 1984). Habitat of *Pentachaeta* is characterized by a low percentage of total vegetative cover, and exposed soils that exhibit a microbiotic crust (Balnap 1990), partially assisting in reducing competition with other species. Rodents (*Perognathus* spp. and *Peromyscus* spp.) and harvester ant colonies (*Pogonomyrex* spp.) also manage the vegetative density at lower competitive levels (Thomas and Wishner 1988).

There are very few collections of *P. lyonii*; the majority were made around the turn of the century and from locations where the species has been extirpated (Palos Verdes Peninsula and Santa Catalina Island). The first record from the Santa Monica Mountains was made in 1926 from an unknown location in the Malibu Hills (NDDB 1992). It was not until 1963, when Peter Raven and Henry Thompson were collecting for their *Flora of the Santa Monica Mountains* (1966), that *P. lyonii* was again documented from the Santa Monica Mountains (that population has since been extirpated by conversion to agriculture). David Verity (Herbarium, Mildred E. Mathias Botanical Garden, University of California, Los Angeles, pers. comm., 1992) discovered the eastern-most population of *P. lyonii* in the Santa Monica Mountains at Stunt Ranch in 1977.

Pentachaeta lyonii is currently known from fewer than 20 sites in the Santa Monica Mountains and the western Simi Hills, a distance of approximately 32 kilometers (20 miles). Other sites containing potential suitable habitat are limited, reducing the likelihood of finding additional populations.

Six populations occur on public lands managed by the National Park Service (NPS), DPR, Santa Monica Mountains Conservancy (SMMC), and COSCA. Three of those sites have experienced population reductions from recreational impacts and natural events, and currently the populations consist of fewer than 100 individuals each. The remaining locations are privately-owned, all with active threats from existing or proposed development.

In southern California, the dudleya or live-forever genus (*Dudleya*) comprises species of succulent, rosetta-forming perennial plants in the stonecrop family (Crassulaceae). Members of this genus frequently inhabit rocky soils or rock outcrops, both along the coast and in interior mountain ranges. The Santa Monica Mountains represent one of the most diverse concentrations of the genus. Because of the patchy and limited distribution of rocky outcrop habitat within other plant community types, many species of *Dudleya* tend to be highly localized in their distribution.

In California, 39 species and subspecies of *Dudleya* included within 3 subgenera are currently recognized (Bartel 1991a). All four *Dudleya* species being proposed for listing herein are members of the subgenus *Dudleya*. This subgenus is separated from two others on the basis of the following characteristics: Corolla tubular, rather than petals united for less than ⅓ of their length; primary stem an above-ground caudex, rather than a subterranean corm; and leaves generally evergreen, rather than vernal (withering after the growing season).

Dudleya abramsii ssp. *parva* (Conejo dudleya) was first described in 1923 as *Dudleya parva* by Joseph N. Rose and Anstruther Davidson (Moran 1948) based on a cultivated collection made a year earlier by Mrs. J. H. Bullard from the Conejo Grade in Ventura County. No further mention was made of the plant

in other regional floras for several decades, though Munz listed *Dudleya parva* as a synonym of Echeveria lanceolata in 1935 (Moran 1948). In 1960, Moran recognized *Dudleya parva* in his treatment of the genus (Moran in Jacobsen 1960), and it was subsequently also recognized by Munz in his Flora of Southern California (Munz 1974). In 1991, Jim Bartel published the combination *Dudleya abramsii* ssp. *parva*, based on similar floral features between *D. parva* and *D. abramsii* (Bartel 1991b).

Dudleya abramsii ssp. *parva* forms a rosette of oblanceolate leaves that are 1.5 to 4 cm (0.6 to 1.6 in) long, 3 to 6 mm (1.2 to 2.4 in) wide, and, unlike most species in the subsection *Dudleya*, are vernal, withering by early summer. The inflorescence is 5 to 18 cm (2.0 to 7.1 in) long, tipped with pale yellow flowers that are often flecked with red on the keel. The roots are constricted at irregular intervals (TNC 1986).

Dudleya abramsii ssp. *parva* is known only from the western terminus of the Simi Hills west along the Montclef Ridge to the Conejo Grade, a distance of approximately 16 kilometers (10 miles). It grows at the base of scattered rock outcrops of the Conejo volcanics in grassland and coastal sage scrub habitats. A portion of the plant's habitat is on lands designated as "open space" by COSCA; the remaining habitat is privately-owned. Threats to this species include recreational activity (hiking and equestrian use); urban development; fire management and suppression activities; and overcollection.

Dudleya cymosa was first described by Charles Antoine Lemaire in 1858 as *Echeveria cymosa* based on a collection sent to him by horticulturalist Louis de Smet of Ledeburg, Belgium; however, the type locality is unknown and the type specimen has been lost (Moran 1951). In 1903, Britton and Rose renamed the taxon *Dudleya cymosa* (Moran 1951). *Dudleya cymosa* includes six subspecies that range throughout the Sierra Nevada, the coast ranges, the transverse ranges, and the northern portion of the peninsular ranges; however, the two subspecies being proposed herein have very restricted distributions.

Dudleya cymosa ssp. *marcescens* (marcescent dudleya) was first observed by Charlotte M. Hoak in 1932 in Little Sycamore Canyon in the Santa Monica Mountains (Rooksby 1936). However, the plant was not described until 1951 by Reid Moran, based on a specimen that he collected in 1948 at the same location (Moran 1951, 1957).

Dudleya cymosa ssp. *marcescens* is distinguished from other subspecies of *D. cymosa* by the habit of the rosette leaves withering in the summer. A longer flowering stalk and wider leaves distinguish *D. cymosa* ssp. *marcescens* from *D. abramsii* ssp. *parva*. The rosette leaves are 1.5 to 4 cm (0.6 to 1.6 in) long, 5 to 12 mm (2.0 to 4.7 in) wide; the caudex is 2 to 7 mm (0.8 to 2.8 in) thick, floral stems are 4 to 10 cm (1.6 to 4 in) tall; corollas are bright yellow to yellow with red markings to bright red. It typically occurs on the lower reaches of sheer volcanic rock surfaces and canyon walls adjacent to perennial streams. In most locations, the topographic relief has precluded soil formation; therefore, the dudleya may be the only vascular plant occurring in a microhabitat that is otherwise dominated by mosses and lichens (CNPS 1986).

Dudleya cymosa ssp. *marcescens* is known from 6 occurrences in the Santa Monica Mountains, from Hidden Valley to Malibu Creek State Park, a distance of 24 kilometers (15 miles). Estimates of the number of individuals at each occurrence are between 50 and 200 plants; the total number of individuals is estimated to be fewer than 1000. The microhabitat requirements of the plant limit the possibility that any additional large populations will be found. Half the populations occur on lands owned and managed by DPR; one location occurs on a NPS administrative easement; the remaining populations are on lands in private ownership. On DPR lands, the plant is threatened by recreational use, particularly rock climbing and fire. At least one of the populations located on private land is threatened with development.

The distinct variation in attributes of *Dudleya cymosa* ssp. *marcescens* between sites has been commented upon (Kei Nakai, Herbarium, Mildred E. Mathais Botanical Garden, University of California, Los Angeles, pers. comm., 1992; Mark Dodero, graduate student San Diego State University, pers. comm., 1992). Nakai believes that a small population at Rattlesnake Canyon in Santa Barbara County shares characteristics with this subspecies. Bartel (1992b) has made a tentative determination of *D. cymosa* ssp. *marcescens* for a population in the Santa Ana Mountains, Orange County. Should these additional populations prove to be marcescent dudleya, this will not alter the proposed status, due to the existing threats and extremely limited population numbers.

Dudleya cymosa ssp. *ovatifolia* (Santa Monica Mountains dudleya) was first described as *Dudleya ovatifolia* by Britton in 1903 based on a collection made by H.M. Hall the previous year (Moran 1951). The type locality is listed as "Sierra Santa Monica," thought to be Topanga Canyon, Los Angeles County (Moran 1951). The species was subsequently recognized as *Cotyledon ovatifolia* and *Echeveria ovatifolia* (Fedde 1904 and Berger 1930 respectively in Moran 1951) when different generic concepts were used in the family Crassulaceae. In 1957, Moran published the new combination *Dudleya cymosa* ssp. *ovatifolia* (Moran 1957).

In 1983, Nakai considered a form found near Agoura, Los Angeles County, as a distinct race of *Dudleya cymosa* ssp. *ovatifolia* and 4 years later published the new combination *Dudleya cymosa* ssp. *agourensis* to refer to this form (Nakai 1987). Nakai distinguished the new subspecies from the other on the basis of number and shape of rosette leaves, pedicel length, and degree of spreading in petal apices. Bartel (1992a) considers that these characters exhibit a high degree of variability and are taxonomically unreliable; therefore, in his revision of the genus for the Jepson Manual he has retained the "Agoura" form within *Dudleya cymosa* ssp. *ovatifolia*. The taxon being proposed for listing herein includes *Dudleya cymosa* ssp. *agourensis* as described by Nakai.

Like most taxa in the section *Dudleya*, *D. cymosa* ssp. *ovatifolia* has rosette leaves that are evergreen rather than withering in the summer. Leaves are 2 to 5 cm (0.8 to 2.0 in) long, 1.5 to 2.5 cm (0.6 to 1.0 in) wide; floral stems are 4 to 15 cm (1.6 to 6.0 in) tall; corollas are pale yellow (Moran 1957).

Dudleya cymosa ssp. *ovatifolia* is found scattered along exposed north-facing slopes of the Santa Monica Mountains from near Westlake Village to Agoura ("Agoura" form), and in deep canyon bottoms along lower Malibu Creek and Topanga Creek. Fewer than 10 occurrences of the dudleya have been reported, each consisting of no more than several hundred individuals. While future surveys may locate additional occurrences of the "Agoura" form along the northern slopes of the Santa Monica Mountains, the limited habitat available makes it unlikely that the total number of individuals will exceed several thousand.

Material from a collection taken from Modjeska Canyon on the western flank of the Santa Ana Mountains, Orange County, in 1951 by Verity (pers. comm., 1992) was included in Uhl and Moran's cytotaxonomic treatment of *Dudleya* as *Dudleya ovatifolia* (Uhl and Moran 1953). This population consists of between several hundred and a thousand individuals and represents a range disjunction of approximately 100 kilometers (60 miles) to the southeast of the Santa Monica Mountains. Constance

Rutherford and Fred Roberts (Fish and Wildlife Service botanists) visited the site in June 1992 and were unable to locate any living material). Bartel (1992b) has made a tentative determination of the only known voucher for this population as *Dudleya cymosa* ssp. *marcescens*. Subsequent determination of this population as either *D. cymosa* ssp. *marcescens* or *D. cymosa* ssp. *ovatifolia* will not affect the threatened status of the *Dudleya* complex.

Populations of *Dudleya cymosa* ssp. *ovatifolia* in Malibu and Topanga Canyons occur largely on lands owned and managed by DPR; one of these occurrences is relatively inaccessible; however, another occurrence is directly adjacent to private property that has recently been bulldozed for development access (Suzanne Goode, Resource Ecologist, California Department of Parks and Recreation, Santa Monica Mountains, pers. comm., 1992). Two occurrences are on lands designated as open space by COSCA; the remaining occurrences are on several privately owned properties zoned for commercial and residential development.

Dudleya verityi (Verity's dudleya) occupies an extremely limited portion of the lower Conejo Grade, Ventura County. It was originally collected in 1944 by Reid Moran, who treated it as *Dudleya caespitosa*. In their 1966 *Flora of the Santa Monica Mountains*, Peter Raven and Henry Thompson treated it as *Dudleya farinosa* (Raven and Thompson 1966). In 1983, Nakai described it as *Dudleya verityi* (Nakai 1983).

Dudleya verityi is unique among those being discussed herein in that it forms multiple rosettes—as many as 100 to a colony. Rosette leaves are 2 to 5 cm (0.8 to 2.0 in) long and 5 to 8 mm (0.2 to 0.4 in) wide; floral stems are 5 to 15 cm (2.0 to 5.9 in) tall; corollas are lemon yellow with petal tips recurved to 90 degrees.

Dudleya verityi is extremely limited in distribution, occurring in a narrow band 6.4 km (4 miles) in length along the lower slopes of Conejo Mountain. Historically, the lower slopes of Conejo Mountain have been the site for quarrying of construction-grade rock. There are abandoned, active, and proposed quarry operations within the distribution of *D. verityi*. The location with the highest concentration of *D. verityi* is proposed for excavation to widen a flood control channel (Envicom 1992). The majority of the distribution of *D. verityi* is on privately-owned land in a region with rapidly increasing development. The populations that are owned by a public agency (Ventura County Flood Control District) are threatened with extirpation from flood control activities.

Previous Federal Action

Federal government actions on these six 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. This report, designated as House Document No. 94–51, and presented to Congress on January 9, 1975, recommended *Astragalus brauntonii* and *Dudleya parva* (now treated as *Dudleya abramsii* ssp. *parva*) for threatened status, and *Dudleya cymosa* ssp. *marcescens* and *Pentachaeta lyonii* for endangered status. The Service published a notice in the July 1, 1975, **Federal Register** (40 FR 27823) of its acceptance of the report as a petition within the context of section 4(c)(2) (now section 4(b)(3)(A)) of the Act, and of the Service's intention thereby to review the status of the plant taxa named therein. The above four taxa were included in the July 1, 1975, notice. The Service published a proposal in the June 16, 1976, **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 cymosa* ssp. *marcescens* and *Pentachaeta lyonii* were included in the June 16, 1976, **Federal Register**.

General comments received in relation to the 1976 proposal were summarized in the April 26, 1978, **Federal Register** (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 6, 1976, proposal along with four other proposals that had expired.

The Service published an updated notice of review for plants in the December 15, 1980, **Federal Register** (45 FR 82480). This notice included *Astragalus brauntonii, Dudleya cymosa* ssp. *marcescens, Dudleya parva,* and *Pentachaeta lyonii* as category 1 candidate species (species for which data in the Service's possession are sufficient to support proposals for listing). On November 28, 1983, the Service published in the **Federal Register** a supplement to the Notice of Review (48 FR 53640); the plant notice was again revised September 27, 1985 (50 FR 39526). *Dudleya parva* was included in the 1983 supplement and the 1985 revision as a category 1 candidate species. *Astragalus brauntonii, Dudleya cymosa* ssp. *marcescens,* and *Pentachaeta lyonii* were included in both of these revisions as category 2 species (species for which data in the Service's possession indicate listing may be appropriate, but for which additional biological information is needed to support a proposed rule). *Dudleya verityi* was included for the first time in the 1983 supplement, and again in the 1985 revision, as a category 2 species. On February 21, 1990 (55 FR 6184), the plant notice was again revised, and *Dudleya parva* and *Pentachaeta lyonii* were included as category 1 taxa, while *Astragalus brauntonii, Dudleya cymosa* ssp. *marcescens,* and *Dudleya verityi* were included as category 2 taxa.

Recent review of the threats facing *Astragalus brauntonii, Dudleya cymosa* ssp. *marcescens,* and *D. verityi* throughout their ranges, as well as the available status information on these three species, resulted in their elevation to category 1 candidate status and indicates that listing as endangered for *A. brauntonii,* and threatened for *D. cymosa* ssp. *marcescens* and *D. verityi* is warranted at this time. *Dudleya cymosa* ssp *ovatifolia* has no previous status as a Federal candidate. However, during the course of this review, it also came to the Service's attention, through information supplied by the California Department of Fish and Game's Natural Diversity Data Base, the California Native Plant Society, and private botanical consultants, that due to the limited range of *D. cymosa* ssp. *ovatifolia* and the similar threats that this taxon is facing, that listing as threatened is warranted at this time. As mentioned previously, *Dudleya abramsii* ssp. *parva* (as *D. parva*), and *Pentachaeta lyonii* are category 1 candidates; available information supports the listing of *D. a.* ssp. *parva* as threatened and *P. lyonii* as endangered.

Section 4(b)(3)(B) of the Endangered Species Act, as amended in 1982, requires the Secretary to make findings on certain 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 *Astragalus brauntonii, Dudleya parva, Dudleya cymosa* ssp. *marcescens,* and *Pentachaeta lyonii* because the 1975 Smithsonian report was accepted as a petition. In October 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, and 1991 the Service found that the petitioned listing of these taxa was warranted, but that the listing of these

species was precluded by other pending proposals of higher priority. Publication of this proposal constitutes the warranted finding for these taxa, as well as for *Dudleya verityi* and *Dudleya cymosa* ssp. *ovatifolia*.

Summary of Factors Affecting the Species

Section 4 of the Endangered Species Act (16 U.S.C. 1533) 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 *Astragalus brauntonii* Parish (Braunton's milk-vetch), *Pentachaeta lyonii* Gray (Lyon's pentachaeta), *Dudleya cymosa* (Lem.) Britt. & Rose ssp. *marcescens* Moran (marcescent dudleya), *Dudleya cymosa* (Lem.) Britt. & Rose ssp. *ovatifolia* (Britt.) Moran (Santa Monica Mountains dudleya), *Dudleya abramsii* Rose spp. *parva* (Rose & Davids) Bartel (Conejo dudleya), and *Dudleya verityi* Nakai (Verity's dudleya) are as follows:

A. The present or threatened destruction, modification, or curtailment of its habitat or range. Although steep terrain typifies *Astragalus brauntonii* habitat, several populations have been extirpated by urban development. Within the last 10 years, one site has been extirpated (Monrovia) and two others have incurred significant losses related to development (Santa Ynez Canyon and Simi Hills). Another location has recently been approved for development by the City of Anaheim (Coal Canyon). There are no known populations that are not experiencing primary or secondary threats to survival as a result of development pressure. Currently, only a small portion of the Santa Ynez Canyon population occurs on public land (DPR).

The City of Anaheim has recently approved a development project that will eliminate 50 percent of the population in the Santa Ana Mountains (Environmental Impact Report (EIR) 302 for Mountain Park Specific Plan, March 1, 1991; and EIR 298 for Cypress Canyon, February 15, 1991). The County of Ventura has recently approved a development that will eliminate a substantial portion of the *Astragalus brauntonii* habitat in the Simi Hills without adopting viable mitigation measures presented in the EIR (EIR State Clearinghouse No. 89010251, Oak Park Zone III, January 1991). A previously approved development has destroyed the majority of *A. brauntonii* habitat in Santa Ynez Canyon (Goode, pers. comm., 1992). Six of the eight extant populations are currently threatened by development.

Varied and controversial fire management policies have been implemented in southern California, generally without any clear understanding of their long-term ecological effects. Because *Astragalus brauntonii* requires periodic fire to maintain its continued existence, its persistence is compromised by the current practice of suppressing all wildland fires. Heavy equipment, such as bulldozers brought in to extinguish wildfires, are an additional threat to the species. The use of prescribed fire as a management option will be difficult because approved development is situated extremely close to "protected" populations of *Astragalus brauntonii* (D. Tony Gross, Environmental Specialist, National Park Service, pers. comm., 1992). Current fire management prescriptions include wet season burns or crush and burn techniques, which are questionable management tools for maintenance of sensitive species.

Pentachaeta lyonii continues to be affected by urban development. The Lake Sherwood Golf Course and the Ronald Reagan Presidential Library, both recently approved and developed, have eliminated substantial populations of *P. lyonii*. The Lake Eleanor Hills Project has been approved and will eliminate a population of several thousand *P. lyonii*. This plant is associated with grassland habitats and terrains that present very few engineering challenges and, as is often the case, a project proponent has invested time and money in project design prior to resource inventory. Past attempts to avoid or compensate for impacts have produced conditions that are not favorable for the long-term maintenance of the populations. Reserve sites have been designed without adequate buffer zones to maintain site integrity. Currently a 15 meter (50 ft) buffer is required by local permitting agencies. This inadequate buffer size will prevent the necessary use of prescribed fire as a management tool for population maintenance. Inadequate buffer designs have resulted in changes in surface and subsurface hydrology, competition with non-native species, loss of habitat for potential pollinators, and elimination of natural fire cycles.

Sites that have been set aside as mitigation areas, with seed and soil distributed from previously extant populations of *Pentachaeta lyonii*, have failed to successfully reestablish viable populations (Carl Wishner, Biologist, Envicom Corp., pers. comm., 1992).

Dudleya cymosa ssp. *marcescens* is threatened with residential development at one location (Mitigated Negative Declaration, Project No. 911 76, Los Angeles County).

Portions of populations of *Dudleya cymosa* ssp. *ovatifolia* and *Dudleya abramsii* ssp. *parva* have been extirpated by development in the Cities of Agoura Hills and Thousand Oaks. The majority of the distribution of these two plants is on private lands occurring in a region with increasing development pressures. Weed abatement operations have been carried out along roadsides where *Dudleya cymosa* ssp. *ovatifolia* occurs. These involved scraping with a skiploader, and destroyed several hundred individuals. *Dudleya abramsii* ssp. *parva* is also affected by trampling and off-road vehicle activities on public and private lands.

Dudleya verityi reaches its greatest density on cliff habitats at the base of Conejo Mountain where it would be extirpated by a plan to widen a flood control channel that has been approved for construction by the County of Ventura. Although the Ventura County Flood Control District has obtained a Mitigated Negative Declaration based on a salvage and reintroduction experiment, the potential success of the mitigation is questionable. Experiments conducted to evaluate reintroduction techniques have a reported failure of approximately 50 percent within the first year of monitoring (Lockard 1991).

B. Overutilization for commercial, recreational, scientific, or educational purposes. Some taxa have become vulnerable to collecting by curiosity seekers as a result of increased publicity following publication of a listing proposal. Overutilization is probably not applicable to *Astragalus brauntonii* or *Pentachaeta lyonii*. However, because of the milk-vetch's large stature and striking appearance, it may be vulnerable to casual collection, particularly along firebreaks adjacent to areas used for recreational activities. Virtually all members of the genus *Dudleya* have been subject to collection, owing to their unique appearance and their ability to be transplanted. The four *Dudleya* taxa that are subjects of this rule have all been collected by professional horticulturists and most likely by amateur collectors and gardeners as well.

C. Disease or predation. Neither disease nor predation are known to be a factor for any of the taxa except *Pentachaeta lyonii*. As part of a program to mitigate the loss of a substantial

population of *Pentachaeta lyonii*, plants grown from seed at Rancho Santa Ana Botanic Gardens were severely damaged by a white fly infestation (Orlando Mistretta, endangered plant specialist, Rancho Santa Ana Botanic Garden, pers. comm., 1992). During a field survey, Rutherford observed substantial dieback of caudex bases of *Dudleya verityi* on the west slope of Conejo Mountain from unknown causes.

D. The inadequacy of existing regulatory mechanisms. The California Fish and Game Commission has listed *Dudleya cymosa* ssp. *marcescens* as rare and *Pentachaeta lyonii* as endangered under the Native Plant Protection Act (NPPA) (Div. 2, chapter 10 sec. 1900 et seq. of the California Fish and Game Code) and the California Endangered Species Act (CESA) (Div. 3, chapter 1.5 sec. 2050 et seq.). *Astragalus brauntonii, Dudleya abramsii* ssp. *parva, Dudleya cymosa* ssp. *ovatifolia,* and *Dudleya verityi* are included 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. Although NPPA and CESA both prohibit the "take" of State listed plants (chapter 10 sec. 1908 and chapter 1.5 sec. 2080), these existing statutes appear inadequate to protect against 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, the Fish and Game Code requires only that the landowner notify the agency "at least 10 days in advance of changing the land use to allow salvage of such plant" (chapter 10 sec. 1913).

Local lead agencies empowered to uphold and enforce the regulations of the California Environmental Quality Act (CEQA) have made determinations that have or will adversely affect *Pentachaeta lyonii, Astragalus brauntonii, Dudleya abramsii* ssp. *para,* and *Dudleya verityi.* Mitigation measures used to condition project approvals are essentially experimental and fail to adequately guarantee protection of substainable populations. Relocation attempts have failed, and project designs have failed to provide an adequate buffer zone around populations to permit long-term viability at those locations.

While the public agencies that manage lands with occurrences of these and other sensitive plant species have a mandate to protect the resources, none of those agencies have specific management plans for the species in this proposal. When the Santa Monica Mountains National Recreation Area (SMMNRA) was authorized by Congress in 1978, it was given the authority to comment on projects being proposed within the "sphere of influence" of the SMMNRA planning area. However, such comments made by the SMMNRA are not binding upon the project proponent.

Public agencies reviewing requests for large development projects are required by CEQA to conduct surveys of the biological resources of a project site. Sensitive species located during surveys are to be reported to the Natural Diversity Data Base (NDDB) which is maintained by the California Department of Fish and Game's Natural Heritage Division. In actuality, however, if the project proponent considers the information proprietary, consulting biologists (hired by the project proponents to prepare public documents) may not report to the NDDB. Project proponents may also elect to ignore the results of the surveys if the occurrences of sensitive species are viewed as a constraint on project design. This further aggravates the endangerment of those species.

COSCA was jointly established by the Conejo Open Space Committee and the City of Thousand Oaks to set aside lands for parks, wildlife corridors, and recreation. Lands included in the regional parks system have been rezoned to allow for development in the past; open space designation of such lands is not binding.

E. Other natural or manmade factors affecting its continued existence. The grasslands of California have been affected by grazing for 200 years, resulting in a type-conversion from native, annual and perennial grass and herb species to aggressive, non-native annual species.

The fire management policies of the last 200 years have been based on fire exclusion, which has disrupted natural processes, causing an imbalance in ecosystem functioning in grasslands, coastal sage scrub, chaparral, and oak woodlands. The habitats of most of California are highly adapted to periodic fires. The reduction of fire frequency has resulted in an accumulation of fuels in woody vegetation where fire intensity and duration are now more severe (O'Leary 1990).

The effects of air pollution on coastal sage scrub in the Santa Monica Mountains has been documented as a threat to the viability and functioning of the habitat (O'Leary 1990).

At least two populations of *Pentachaeta lyonii* have been eliminated as a result of natural conditions, specifically gopher tilling of the soil, which facilitates the growth of competitive, non-native weeds. Stable populations of *P. lyonii* occur in sites that have a crusty soil surface that results in lower spatial competition from non-native annual grasses. When the crust is broken, the aggressive non-native annual weeds have displaced *P. lyonni.*

Human-caused disturbance, such as roads, trails, and minor landform alterations, has functioned to provide a zone where the competition from aggressive, non-native annual weeds is reduced, thereby allowing *P. lyonii* to grow. This artificial habitat contains a zone of highly compacted soils devoid of vegetation graduating to a zone of high vegetative cover; in between is a narrow strip of habitat suitable for *P. lyonii.* This habitat modification cannot be expected to sustain natural, viable populations of this species. Natural openings in the chaparral are maintained in part by a mosaic of soil types and periodic fires. Land uses adjacent to populations of *P. lyonii* that are not designed to be compatible with periodic fires will place additional stress on the long-term integrity of sustainable populations of this plant.

The populations of *Pentachaeta lyonii* on parklands owned and managed by NPS have been reduced by recreational trampling. Those populations were fenced in 1988 to prevent further impacts, but have not recovered (T. Thomas, pers. obs., 1992).

Dudleya cymosa ssp. *marcescens* is adversely affected at four sites by recreational activities, primarily rock climbing. Plants are apparently destroyed through rapelling and bouldering activities. Fire has been observed to severely reduce population densities and destroy the moss substrate that *D. cymosa* ssp. *marcescens* requires (Dodero, pers. comm., 1992).

By virtue of the limited number of individuals and/or range of the existing populations, at least three (*Astragalus brauntonii, Dudleya abramsii* ssp. *parva, Dudleya verityi*) and possibly all of the taxa proposed herein are threatened with stochastic extinction. Genetic viability is reduced in small populations, making them vulnerable to extinction by a single human-caused or natural event. The potential for extinction owing to small population size is exacerbated by natural causes such as drought, fire, rock slides, an outbreak of insects, or disease. The whitefly infestation that destroyed a

living collection of *Pentachaeta lyonii* at Rancho Santa Botanic Garden is indicative of the impact that single events could have on small and/or isolated 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. Based on this evaluation, the preferred action is to list *Astragalus brauntonii* and *Pentachaeta lyonii* as endangered, and *Dudleya cymosa* ssp. *marcescens*, *Dudleya cymosa* ssp. *ovatifolia*, *Dudleya abramsii* ssp. *parva*, and *Dudleya verityi* as threatened. The six taxa are individually threatened by one or more of the following: habitat alteration and destruction resulting from urban development; recreational activities; alteration of natural fire cycles within the coastal sage scrub, chaparral, grassland, and oak woodland communities; drought stress; and over-collection. The limited distribution of habitat for certain taxa (i.e., *Dudleya verityi*) and their small population size (i.e., *Astragalus brauntonii*) makes them particularly vulnerable to extinction from stochastic events.

Astragalus brauntonii and *Pentachaeta lyonii* are in danger of extinction throughout all or a significant portion of their ranges, thus they fit the definition of endangered as defined in the Act. The Service has determined that threatened status rather than endangered status is appropriate for *Dudleya abramsii* ssp. *parva*, *Dudleya cymosa* ssp. *marcescens*, *Dudleya cymosa* ssp. *ovatifolia*, and *Dudleya verityi* because these taxa are restricted to habitats that are somewhat less vulnerable to the threat of development. Therefore, although in need of protection as threatened species, these species are not yet in danger of extinction throughout all or a significant portion of their range and hence do not now qualify as endangered species. Certain populations of *Dudleya cymosa* ssp. *marcescens* and *Dudleya cymosa* ssp. *ovatifolia* occurring on lands owned and managed by DPR are protected from destruction of habitat from development. However, habitat degradation due to recreational activities, such as rock climbing, continues. Management activities, such as the establishment of a regional parks system by COSCA have somewhat reduced the potential for habitat destruction for *Dudleya abramsii* ssp. *parva*. In the case of *Dudleya verityi*, the County of Ventura is currently undertaking studies to determine the most feasible portion(s) of Conejo Mountain for acquisition as permanent open space, as a preliminary step toward entering into a Mitigation Agreement with the California Department of Fish and Game. This action has been deemed necessary in order to compensate for a proposed take of this species in connection with a flood control project on Conejo Creek. Despite these management activities, occurrences of these four taxa receive no protection where they occur on private lands, and current ongoing efforts to secure additional protection for certain sites have yet to be achieved. These four taxa appear to be likely to become in danger of extinction within the foreseeable future. Critical habitat is not being proposed for these taxa for reasons discussed in the "Critical Habitat" section of this proposal.

Critical Habitat

Section 4(a)(3) of the Act, as amended, requires that, to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time the species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not presently prudent for these taxa. As discussed under Factor B in the Summary of Factors Affecting the Species, the four *Dudleya* species are particularly threatened by taking, an activity difficult to enforce against, and only regulated by the Act with respect to plants in cases of (1) removal and reduction to possession of listed plants from lands under Federal jurisdiction, or their malicious damage or destruction on such lands; and (2) removal, cutting, digging-up, or damaging or destroying on any other lands in knowing violation of any State law or regulation, including State criminal trespass law. Such provisions are difficult to enforce, and publication of critical habitat descriptions and maps required in a proposal for critical habitat could increase the degree of threat to the four *Dudleya* from take or vandalism, and, therefore, could contribute to their decline and increase enforcement problems. The listing of species as either endangered or threatened publicizes the rarity of the plants and, thus, can make these plants attractive to researchers, curiosity seekers, or collectors of rare plants. All Federal and State agencies involved and local planning agencies have been notified of the location and importance of protecting these species' habitat. Protection of these species' habitat will be addressed through the recovery process and the application of the jeopardy standard through the section 7 consultation process. Therefore, the Service finds that designation of critical habitat for these plants is not prudent at this time; 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 Endangered Species 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 Endangered Species 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 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 informally 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.

Five of the taxa, *Astragalus brauntonii*, *Dudleya cymosa* ssp. *marcescens*, *Dudleya cymosa* ssp. *ovatifolia*, *Dudleya verityi*, and *Pentachaeta lyonii* occur within the current boundaries of the Santa Monica Mountains National Recreation Area. National Park Service activities that could potentially affect these taxa and their habitats are primarily recreational activities including hiking, equestrian use, and rock climbing. Urban development projects that are occurring on private lands may need permits from Federal agencies, such as section 404

permits from the U.S. Army Corps of Engineers. A proposed radio tower on Montclef Ridge would ultimately require a permit to operate from the Federal Communications Commission. Several private parcels are currently undergoing transfer of ownership at the direction of the Federal Deposit Insurance Corporation.

The Act and its implementing regulations found at 50 CFR 17.61, 17.62, and 17.63 for endangered plants, and at 50 CFR 17.71 and 17.72 for threatened plants set forth a series of general prohibitions and exceptions that apply to all threatened or endangered plants. With respect to the two plant taxa proposed to be listed as endangered, all trade prohibitions of section 9(a)(2) of the Act, implemented by 50 CFR 17.61, would apply. These prohibitions, in part, make it illegal with respect to any endangered plant 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 these species 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.

The four *Dudleya*, proposed herein to be listed as threatened, would be subject to similar prohibitions (16 U.S.C. 1538(a)(2)(E); 50 CFR 17.71). Seeds from cultivated specimens of threatened plant species are exempt from these prohibitions provided that a statement of "cultivated origin" appears on their containers. 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 and threatened plant species under certain circumstances. Requests for copies of the regulations on 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) 358–2093.

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 these species;

(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.

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

References Cited

Abrams, L. 1944. Illustrated flora of the Pacific States, Vol. II. Stanford Univ. Press.

Barneby, R. 1964. Atlas of North American Astragalus. Part II. Memoirs of the New York Botanical Garden, Vol. 13, pp. 1120–1121.

Bartel, J. 1991a. Final text, *Dudleya*, for the Jepson Manual Project, unpub. manuscript.

Bartel, J. 1991b. Nomenclatural changes in *Dudleya* (Crassulaceae) and *Cupressus* (Cupressaceae). Phytologia 70(4):229–230.

Bartel, J. 1992a. Taxonomic information on five Dudleyas from the Santa Monica Mountains, Ventura and Los Angeles Counties. February 12, 1992, memorandum to the USFWS Ventura Field Office.

Bartel, J. 1992b. Identification of *Dudleya* collections from Santa Ana Mountains, Orange County. June 22, 1992, memorandum to the USFWS Ventura Field Office.

Belnap, J. 1990. Microbiotic crusts: Their role in past and present ecosystems. Park Science: a resource management bulletin U.S. Dept. Int., Nat'l. Park Service, vol. 10, no. 3.

CNPS. 1979. Astragalus brauntonii. California Native Plant Society Status Report. Sacramento.

CNPS. 1986. Dudleya cymosa ssp. marcescens. California Native Plant Society Status Report. Sacramento.

Dice, J. 1988. Systematic study in the *Nolina bigelovii—N. parryi* complex. Masters Thesis. San Diego State University.

Envicom Corp. 1992. Alternatives analysis Conejo Creek realignment project. Prepared for Ventura Flood Control District.

Jacobsen, H. 1960. A handbook of succulent plants. Blandford Press. London, pp. 344–359.

Keck, D.D. 1958. Taxonomic notes on the California Flora. Aliso (4(1):102.

Lockard, W. 1991. Progress report on experiments conducted to evaluate revegetation techniques for selected plant species in Conejo Creek from Highway 101 to Calleguas Creek. Unpublished report, Ventura Co. Flood Control District.

Moran, R. 1948. *Dudleya Parva*. Rose & Davidson. Desert Plant Life 20:137–140.

Moren, R. 1951. A revision of *Dudleya*. Ph.D. dissertation, Univ. of California, Berkeley.

Moran, R. 1957. Innovations in *Dudleya*. Madrono 14:106–108.

Munz, P. 1959. A California Flora. University of California Press, Berkeley.

Munz, P.A. 1974. A Flora of Southern California. University of California Press. Berkeley.

NDDB. 1992. Rarefind: A database application for the California Dept. of Fish and Game Natural Heritage Division data.

Nakai, K. 1983. A new species and hybrid of *Dudleya* (Crassulaceae) from the Santa Monica Mountains, California. Cactus & Succulent Journal 55:196–200.

Nakai, K. 1987. Some new and reconsidered California Dudleya (Crassulaceae). Madrono 34(4): 334–353.

O'Leary, J. 1990. California coastal sage scrub: General characteristics and considerations for biological conservation. Schoenherr, A. ed. Endangered Plant Communities of Southern California. So. Cal. Bot. special pub. no. 3.

Raven, P., and H. Thompson. 1966. Flora of the Santa Monica Mountains, California. Univ. of Calif., Los Angeles.

Riefner, R. 1992. The lichen flora of Conejo Mountain, Ventura County (draft manuscript).

Rooksby, E. 1936. No one knows this plant. Desert Plant Life 8:70.

Schoenherr, A. (ed.). 1990. Endangered Plant Communities of Southern California. So. Cal. Bot. special pub. no. 3.

Smith, J.P. and K. Berg. 1988. Inventory of rare and endangered plants of California. California Native Plant Society, 4th ed.

Thomas, T.W. and K. Danielsen. 1984. Rare plant management: A preliminary analysis of the critical habitat of *Pentachaeta lyonii* (Asteraceae) in the Santa Monica Mountains National Recreation Area. In program abstracts. Second Biennial Conference on Research in California's National Parks. 5–7 Sept. 1984. U.C. Davis.

Thomas, T.W. and C. Wishner. 1988. *Pentachaeta lyonii*: Rarity, threats, and recovery plans. In program abstracts. Third biennial conference of research in California's National Parks. 13–15 Sept. 1988. U.C. Davis, CA.

TNC. 1986. Dudleya parva. Element conservation plant—special report. The Nature Conservancy, Sacramento, California.

Uhl, C.H. and R. Moran. 1953. Cytotaxonomy of *Dudleya* and *Hasseanthus*. Amer. J. Bot. 40:492–501.

Van Horn, G. 1973. The taxonomic status of *Pentachaeta* and *Chaetopappa* with a revision of *Pentachaeta*. University of California Publications in Botany 65:41 (5 plates) plates.

Authors

The primary authors of this proposed rule are Constance Rutherford and Timothy Thomas, Ventura Field Office, U.S. Fish and Wildlife Service, 2140 Eastman Avenue, suite 100, Ventura, California 93003 (805/644–1766).

List of Subjects in 50 CFR Part 17

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

Proposed Regulations 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) for plants by adding the following, in alphabetical order under the plant families indicated, 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:						
*	*	*	*	*	*	
Pentachaeta lyonii	Lyon's pentachaeta	U.S.A. (CA)	E	—	NA	NA
*	*	*	*	*	*	
Crassulaceae—Stonecrop family:						
Dudleya abramsii ssp. *parva*	Conejo dudleya	U.S.A. (CA)	T	—	NA	NA
*	*	*	*	*	*	
Dudleya cymosa ssp. *marcescens*	Marcescent dudleya	U.S.A. (CA)	T	—	NA	NA
*	*	*	*	*	*	
Dudleya cymosa ssp. *ovatifolia*	Santa Monica Mountains dudleya	U.S.A. (CA)	T	—	NA	NA
*	*	*	*	*	*	
Dudleya verityi	Verity's dudleya	U.S.A. (CA)	T	—	NA	NA
*	*	*	*	*	*	
Fabaceae—Pea family:						
*	*	*	*	*	*	
Astragalus brauntonii	Braunton's milk-vetch	U.S.A. (CA)	E	—	NA	NA

Dated: November 6, 1992.

Bruce Blanchard,

Acting Director, U.S. Fish and Wildlife Service.

[FR Doc. 92-28947 Filed 11-27-92; 8:45 am]

BILLING CODE 4310-55-M