

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018-AC88

252-94

Endangered and Threatened Wildlife and Plants; Proposed Rule To List Four Southwestern California Plants as Endangered or Threatened

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The Fish and Wildlife Service (Service) proposes to list *Allium munzii* (Munz's onion) and *Atriplex coronata* var. *notatior* (San Jacinto Valley crownscale) as endangered and *Brodiaea filifolia* (thread-leaved brodiaea) and *Navarretia fossalis* (spreading navarretia) as threatened throughout their respective ranges in southwestern California and northwestern Baja California, Mexico, pursuant to the Endangered Species Act of 1973, as amended (Act). Critical habitat is proposed for *Atriplex coronata* var. *notatior*. These four plants occur in vernal pools and other wetlands or on clay soils and moist grasslands and are threatened by a variety of factors including: habitat destruction and fragmentation from agricultural and urban development, pipeline construction, alterations of wetland hydrology by draining or channelization, clay mining, off-road vehicle activity, cattle and sheep grazing, weed abatement, fire suppression practices, and competition from alien plant species. This proposed rule, if made final, would extend the Act's protection to these four plants.

DATES: Comments from all interested parties must be received by February 13, 1995. Public hearing requests must be received by January 30, 1995.

ADDRESSES: Comments and materials concerning this proposal should be sent to the Field Supervisor, U.S. Fish and Wildlife Service, Carlsbad Field Office, 2730 Loker Avenue West, Carlsbad, California 92008. Comments and materials received will be available for public inspection, by appointment, during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: Fred M. Roberts, Botanist, at the above address (telephone 619/431-9440).

SUPPLEMENTARY INFORMATION:**Background**

Allium munzii (Munz's onion),
Brodiaea filifolia (thread-leaved

brodiaea), *Atriplex coronata* var. *notatior* (San Jacinto Valley crownscale), and *Navarretia fossalis* (spreading navarretia) occur within restricted or unique habitats, often in association with a specific soil type or hydrologic regime, or both. The composite range of these four taxa encompasses the interior lowlands and foothills of Los Angeles, San Bernardino, Orange, and Riverside Counties south into coastal San Diego County, California, and northwestern Baja California, Mexico. Although some of these taxa are relatively wide-ranging, all are localized in distribution within their respective ranges because of the restricted and patchy nature of the habitats in which they are found. These four species occur in clay soils or in vernal wetlands that have a clay hardpan or silty alkaline substrate.

Allium munzii and *B. filifolia* have strong preferences for clay soils. Clay soils have unique physical and chemical properties. Fine grain size, small pore, and an expansive nature frequently results in a "hardpan" layer that inhibits water percolation and root penetration. Although rich in mineral content, clay soils hold tightly to soil nutrients resulting in low nutrient availability (Donahue et al. 1977). Adaption to these properties frequently results in a disproportionately large number of plant species (as compared to other soil types) that are endemic to (dependant on) clay soils. For this reason, clay soils are an important contributor to floristic diversity in western Riverside and coastal San Diego Counties.

Navarretia fossalis is largely restricted to vernal pools, with *B. filifolia* as an occasional associate species. Vernal pools occur in areas with shallow depressions that have a clay hardpan soil layer that inhibits water percolation resulting in a perched water table during the winter rainy season and the following spring. Vernal pools retain water only long enough to support relatively few species of aquatic emergent plants and invertebrates. As the pools dry and the surface water recedes toward the center of the pool, a unique and dynamic flora develops in its place. Vernal pools typically occur on mesa tops or valley floors and are surrounded by very low hills, usually referred to as mima mounds (Zedler 1987).

In western Riverside County, the Domino-Traver-Willows soil association (Soil Conservation Service and Bureau of Indian Affairs 1971) in the Perris, San Jacinto, and Menifee Valleys supports a unique assemblage of wetland habitats including vernal wetland plains and

alkali lake playa. These vernal plains have a calcareous hardpan layer near the surface and as a result, a mosaic of dryer and wetter wetland regimes have formed. Vernal pools are scattered throughout the area. Obligate wetland plant species, including *Plagiobothrys leptocladus* (alkali plagiobothrys), *Psilocarphus brevisimus* (woolly marbles), *Plantago elongata* (= *Plantago bigelbii* ssp. *californica*) (California alkali plantain), and *Myosurus minimus* (little mouse-tail), occur within these areas but are not confined to depressions and are frequently found on the surrounding flats, forming an understory to alkali grasslands that are dominated by *Deschampsia danthanioides* (annual hairgrass) and *Hordeum depressum* (low barley). Of the plants considered in this proposed rule, *A. coronata* var. *notatior*, *B. filifolia*, and *N. fossalis* are found within these habitats (D. Bramlet, California Native Plant Society, *in litt.*, 1993).

Many of the same species found on the vernal plains also occur within the sporadically inundated playas of San Jacinto Lake and the San Jacinto River in Riverside County. However, the silty, alkaline soils found in these areas have resulted in alkali playa and alkali sink scrub associations that are markedly different in plant species composition. These communities are dominated by *Suaeda moquinii* (bush seepweed), *Atriplex argentea* (silverscale), *Frankenia salina* (alkali heath), *Lasthenia coulteri* var. *glabrata* (Coulter's goldfields), *Plagiobothrys leptocladus* (alkali plagiobothrys), and *Cressa truxillensis* (alkali weed).

Allium munzii (Munz's onion) was first collected by Philip Munz near Glen Ivy, Riverside County, California, in 1922 and referred to as *A. fimbriatum* var. *munzii* based on the suggestion of F. Owenby and H. Aase, noted experts on the genus *Allium* (Munz 1959). However, this name was not validly published. This error was rectified by H. Traub in 1972 (Traub 1972). In a revision of the *A. fimbriatum* complex, McNeal (1992) elevated this taxon to species status (applying the name *Allium munzii*) based on flower morphology.

Allium munzii is a member of the lily family (Liliaceae). It is a scapose perennial herb, 15 to 35 centimeters (cm) (0.5 to 1.2 feet (ft)) tall, originating from a bulb with a papery, reddish-brown outer coat and light brown inner coat. The scape is firmly attached to the bulb. The single leaf is generally 1.5 times as long as the scape and is round in cross-section (terate) and hollow. The inflorescence is umbellate, consisting of 10 to 35 flowers. The flowers have six

white, or white with a red midvein, perianth segments (undifferentiated petals and sepals) that are 6 to 8 millimeters (mm) (0.2 to 0.3 inches (in)) long that become red with age. The ovary is crested with fine, irregularly dentate processes and the fruit is a three-lobed capsule (Munz 1974, McNeal 1992).

Allium munzii can be distinguished from other members of the genus within its range by its single hollow and terate leaf, the shape of the perianth segments, flower color, and the irregularly dentate crest of the ovary.

Allium munzii is restricted to mesic clay soils in western Riverside County, California. This species is frequently found in association with southern needlegrass grassland, mixed grassland, and open coastal sage scrub or occasionally in cismontane juniper woodlands (California Department of Fish and Game 1989; Steve Boyd, Herbarium Manager, Rancho Santa Ana Botanical Garden, pers. comm., March 1993). *A. munzii* is known from 12 extant populations, 9 of which occur on privately owned land. Four populations occur within the Gavilan Hills including one at Harford Springs County Park. Two populations occur within the Temescal Valley. Five small populations occur in the Paloma Valley, Skunk Hollow, Domenigoni Hills, and Bachelor Mountain areas. One population is located in the Santa Ana Mountains, in part, on Federal land within the Cleveland National Forest (Boyd and Mistretta 1991).

The Service estimates that there are about 20,000 individuals of *A. munzii* (Roberts 1993a). However, in any given year the number of individuals varies depending on rainfall and other factors. Few of the populations are large, and most cover an area from several square meters to 8 hectares (ha) (20 acres (ac)) in extent and contain fewer than 1,000 individuals.

Atriplex coronata var. *notatior* (San Jacinto Valley crownscale) was first described by Willis Jepson in 1914, based on specimen material he collected in 1901 from the dried bed of San Jacinto Lake, Riverside County, California. This taxon was considered a minor variant in a monographic treatment of the genus *Atriplex* (Hall and Clements 1923) and was generally not recognized as distinct from *A. coronata* until Munz (1974) concurred in Jepson's findings in his treatment of southern California plants.

Atriplex coronata var. *notatior* is a member of the goosefoot family (Chenopodiaceae). It is an erect, grassy or woody annual, 1 to 3 decimeters (dm) (4 to 12 in) tall. The grayish leaves are

sessile, alternate, 8 to 20 mm (0.3 to 0.8 in) long and elliptic to ovate-triangular in outline. This taxon is monoecious (male and female flowers on the same plant). The flowers are obscure and develop spherical bracts in the fruiting phase. These bracts have dense tubercles that are roughly equal in number to the marginal teeth (Munz 1974, Taylor and Wilken 1993).

Atriplex coronata var. *notatior* can be distinguished from the more northern *A. coronata* var. *coronata* by its erect stature, the shape of the bract, and the number of tubercles and marginal teeth. *A. coronata* var. *notatior* occurs with seven other species of *Atriplex* within its range (Bramlet 1993b). It can be distinguished from these taxa by a combination of characteristics, including annual habit, the shape of the leaf, and the size and form of the bract (Munz 1974, Taylor and Wilken 1993).

Atriplex coronata var. *notatior* is restricted to highly alkaline, silty-clay soils in association with the Traver-Domino-Willows soils association (see Soil Conservation Service and Bureau of Indian Affairs 1971 for soil type descriptions). It occurs in alkali sink scrub, alkali playa, vernal pools, and, to a lesser extent, in alkali grassland communities (Bramlet 1993a). These areas are typically flooded by winter rains. The duration and extent of flooding is extremely variable from one year to the next. *A. coronata* var. *notatior* germinates after the water has receded. It usually flowers in April and May and sets fruit by May or June (D. Bramlet, *in litt.*, 1992).

Atriplex coronata var. *notatior* is restricted to the San Jacinto, Perris, and Menifee Valleys of western Riverside County, California. This taxon consists of 10 populations that are primarily associated with the San Jacinto River and Old Salt Creek tributary drainages.

About 280 ha (700 ac) of nearly 2,800 ha (7,000 ac) of potential habitat is currently occupied by *A. coronata* var. *notatior*. Three population complexes contain nearly 70 percent of 76 known stands and over 90 percent of the individual plants. These three populations occupy less than 80 ha (200 ac) of habitat. The number of individuals in these populations varies in any given year in response to rainfall, extent of winter flooding, and temperature. Between 1990 and 1994, an estimated 78,000 plants were located. Most stands contain fewer than 1,000 individuals and the majority of the individuals are concentrated in fewer than 10 stands (Roberts 1993b).

The majority of the population complexes of *A. coronata* var. *notatior*, including the three largest, are located

on privately owned lands; less than 30 percent of all known stands and only 10 percent of the population occur on publicly owned land. This taxon is not known to occur on Federal lands.

Brodiaea filifolia was first described by Sereno Watson in 1882 based on a specimen collected by the Parish brothers in 1880 at Arrowhead Hot Springs, San Bernardino County, California (Niehaus 1971). Edward Greene (1887) transferred *B. filifolia* to the genus *Hookeria*. However, recent floristic treatments have not adopted Greene's work, and *B. filifolia* is the currently accepted name (Munz 1974, Beauchamp 1986, Keator 1993).

Brodiaea filifolia is a member of the lily family (Liliaceae). It is a scapose perennial originating from a dark-brown, fibrous-coated corm. The stems are 2 to 4 dm (8 to 16 in) tall with several narrow leaves that are shorter than the scape. The flowers bloom from May to June and are arranged in a loose umbel. The six perianth segments are violet, spreading, and 9 to 12 mm (0.4 to 0.5 in) long. The broad and notched anthers are 3 to 5 mm (0.1 to 0.2 in) long. The fruit is a capsule (Munz 1974, Keator 1993).

Brodiaea filifolia can be distinguished from the other species of *Brodiaea* that occur within its range (*B. orcuttii*, *B. jolonensis*, and *B. terrestris*) by the presence of narrow, pointed staminodia and a thin perianth tube, which splits when in fruit (Munz 1974).

This species typically occurs on gentle hillsides, valleys, and floodplains in mesic, southern needlegrass grassland and alkali grassland plant communities in association with clay, loamy sand, or alkaline silty-clay soils (California Department of Fish and Game 1981, Bramlet 1993a). Sites of occupation are frequently intermixed with, or near, vernal pool complexes, such as in the vicinity of San Marcos (San Diego County), the Santa Rosa Plateau, and southwest of Hemet in Riverside County.

The historical range of *B. filifolia* extends from the foothills of the San Gabriel Mountains at Glendora (Los Angeles County), east to Arrowhead Hot Springs in the western foothills of the San Bernardino Mountains (San Bernardino County), and south through eastern Orange and western Riverside Counties to Carlsbad in northwestern San Diego County, California (California Natural Diversity Data Base (CNDDB) 1992; R. Riggins, private consultant, *in litt.*, 1993).

Twenty-seven populations of *B. filifolia* are known to exist. The majority of the remaining populations are located on the Santa Rosa Plateau in

southwestern Riverside County and in the Vista-San Marcos-Carlsbad region of northwestern San Diego County. The largest population of this species is located on the Santa Rosa Plateau, owned by The Nature Conservancy (TNC). One small population was recently discovered on Camp Pendleton Marine Corps Base (Dawn Lawson, U.S. Marine Corps, range conservationist, pers. comm., 1993). All other extant populations are on privately owned land.

Brodiaea filifolia occupies less than 240 ha (600 ac) of habitat. The total number of individuals of this species and the extent of occupied habitat vary on an annual basis in response to the timing and amount of rainfall, as well as temperature patterns. Most populations contain fewer than 2,000 plants and occupy less than 16 ha (40 ac). The largest extant population is estimated to contain over 30,000 individuals and occupies about 20 ha (50 ac) of habitat.

Brodiaea filifolia occasionally hybridizes with *B. orcuttii* and possibly *B. joloensis*, where these species coexist. At least one major population of plants in the vicinity of Miller Mountain (San Diego County) in the Cleveland National Forest appears to have individuals that represent *B. filifolia*, however, the population is a hybrid swarm between *B. orcuttii* and *B. filifolia* (Boyd et al. 1992).

Navarretia fossalis (spreading navarretia) was first described by Reid Moran in 1977 based on a collection made by Moran in 1969 near La Mission in northwestern Baja California, Mexico. *N. fossalis* is a low, mostly spreading or ascending, annual herb, 10 to 15 cm (4 to 6 in) tall. The lower portions of the stems are mostly bare. The leaves are soft and finely divided, 1 to 5 cm (0.4 to 2 in) long, and spine-tipped when dry. The flowers are white to lavender white with linear petals and are arranged in flat-topped, compact, leafy heads. The fruit is an ovoid, 2-chambered capsule (Moran 1977, Day 1993).

Several other species within the genus occur within the range of *N. fossalis*. Two of these species, *N. intertexta* and *N. prostrata*, can occur in similar habitat. *N. fossalis* can be distinguished from these species by the size and shape of the calyx, the position of the corolla (as compared to the calyx), and the form of the corolla lobes. All *Navarretia* species can be distinguished by the appearance of the pollen grain surface (Day 1993; S. Spencer, Rancho Santa Ana Botanic Garden, *in litt.*, 1993).

The primary habitat of *N. fossalis* is vernal pools. This species occasionally occurs in ditches and other artificial

depressions. However, these depressions often occur within degraded vernal pool habitat (Moran 1977). In western Riverside County, *N. fossalis* has been found in relatively undisturbed and moderately disturbed vernal pools within a larger vernal wetland plain dominated by alkali grassland (Bramlet 1993a).

Navarretia fossalis is distributed from western Riverside County south through coastal San Diego County, California to San Quintin in northwestern Baja California, Mexico. Fewer than 30 populations exist in the United States. Nearly 60 percent of these populations are concentrated in three locations: on Otay Mesa in southern San Diego County, along the San Jacinto River in western Riverside County, and near Hemet in Riverside County (Bauder 1986, California Native Diversity Data Base 1993, Bramlet 1993a).

The number of individuals of *N. fossalis* varies on an annual basis in response to the timing and amount of rainfall and temperature. In Riverside County, at least one population contains 300,000 individuals. Another population contains 75,000 individuals. However, each of these populations occupies less than 8 ha (20 ac) of habitat and the majority of individuals occupy an area of less than 1 ha (2 ac) (D. Bramlet, *in litt.*, 1992). Most populations contain fewer than 1,000 individuals and occupy less than 0.5 ha (1 acre) of habitat. The Service estimates that less than 120 ha (300 ac) of habitat in the United States is occupied by this species.

The majority of *N. fossalis* populations are on privately owned lands. Two populations occur on lands with public or Federal ownership: Camp Pendleton Marine Corps Base and Miramar Naval Air Station.

In Mexico, *N. fossalis* is known from fewer than 10 populations clustered in three areas: along the international border; on the plateaus south of the Rio Guadalupe; and on the San Quintin coastal plain (Moran 1977).

Previous Federal Action

Federal government action on the four plant taxa considered in this rule 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 *B. filifolia* 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 to review the status of the plant taxa named therein, including *B. filifolia*. The Service published a proposal in the June 16, 1976, *Federal Register* (42 FR 24523) to determine approximately 1,700 vascular plants to be endangered species pursuant to section 4 of the Act. *B. filifolia* was also included in this *Federal Register* notice.

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

The Service published an updated notice of review of plants in the *Federal Register* on December 15, 1980 (45 FR 82480). This notice included *B. filifolia* and *N. fossalis* as category 1 candidate taxa (species for which data in the Service's possession are sufficient to support a proposal for listing). On November 28, 1983, the Service published a supplement to the Notice of Review in the *Federal Register* (48 FR 53640). The plant Notice of Review was again revised on September 27, 1985 (50 FR 39526). *B. filifolia* and *N. fossalis* were included in the 1983 and 1985 supplements as category 2 candidate taxa (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). *A. fimbriatum* var. *munzii* (now treated as *A. munzii*) was included in the 1985 Notice of Review as a category 2 taxon. On February 21, 1990, a revised Notice of Review was published in the *Federal Register* (55 FR 6184) that included *A. fimbriatum* var. *munzii* and *B. filifolia* as category 1 candidate taxa, and *A. coronata* var. *notatior* as a category 2 candidate taxon; the status of *N. fossalis* remained unchanged from the 1985 Notice of Review. All four plant taxa were listed as category 1 candidate species in the September 30, 1993, Notice of Review (58 FR 51144).

Section 4(b)(3)(B) of the Endangered Species Act of 1973, as amended in 1982, requires the Secretary to make findings on pending petitions within 12 months of their receipt. Section

4(b)(3)(C)(1) of the Act further requires that all petitions pending on October 13, 1982 be treated as having been newly submitted on that date. That was the case for *B. filifolia* because the 1975 Smithsonian report had been accepted as a petition. In October of 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, and 1992, the Service found that the petitioned listing of this species was warranted, but precluded by other pending listing proposals of higher

priority. Publication of this proposal constitutes the final warranted finding for this taxon.

Summary of Factors Affecting the Species

Section 4 of the Endangered Species Act (16 U.S.C. 1531 et seq.) and regulations (50 CFR part 424) promulgated to implement the listing provisions of the Act set forth the procedures for adding species to the Federal lists. A species may be

determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1). These factors and their application to *Allium munzii* (Traub) McNeal (Munz's onion), *Atriplex coronata* Wats. var. *notator* Jepson (San Jacinto Valley crownscale), *Brodiaea filifolia* Wats. (thread-leaved brodiaea), and *Navarretia fossalis* Moran (spreading navarretia) are discussed below and summarized in Table 1

TABLE 1.—SUMMARY OF THREATS

Species	Threats					
	Urbanization agriculture	ORV ¹ use	Mining	Alteration of hydrology	Trampling grazing	Alien species
<i>Allium munzii</i>	X	X	X	.....	X	X
<i>Atriplex coronata</i> var. <i>notator</i>	X	X	.....	X	X	X
<i>Brodiaea filifolia</i>	X	.....	.....	.....	X	X
<i>Navarretia fossalis</i>	X	X	.....	X	X	X

¹ ORV = off road vehicle.

A. The present or threatened destruction, modification, or curtailment of their habitat or range. The natural plant communities of coastal Orange and San Diego Counties, western Riverside and southwestern San Bernardino Counties, California, and northwestern Baja California, Mexico, have undergone significant changes as a result of both direct and indirect human-caused activities. The rapid urbanization of this region (which currently harbors over 17 million people) has already eliminated a significant portion of the habitat for these four taxa. The remaining patches of habitat are frequently isolated, degraded, and/or fragmented by agricultural practices, streambed channelization and other hydrological alterations, weed abatement, fire suppression practices, grazing, and mining.

Allium munzii occurs in open coastal sage scrub and mesic native perennial grasslands. *B. filifolia* is known to occur in mesic native perennial grasslands. These communities have undergone significant reductions due to urban and agricultural development (Fish and Wildlife Service 1993, Oberbauer and Vanderweir 1991). Approximately 59 percent of the coastal sage scrub in Riverside County has been destroyed since 1945 and as much as 71 percent has been destroyed since 1930 (Fish and Wildlife Service 1993). In San Diego County, 95 percent of the native perennial grasslands and 72 percent of the coastal sage scrub have been

destroyed (Oberbauer and Vanderweir 1991).

Little is known concerning the historical distribution of *A. munzii*. However, as much as 80 to 90 percent of the clay soils in western Riverside County that may have supported habitat for *A. munzii* have been adversely modified through extensive agriculture, urbanization, and clay mining (California Department of Fish and Game 1989).

Allium munzii has recently been extirpated from at least two sites as a result of either agricultural development or clay mining. Other populations of this species have been reduced in terms of available habitat and numbers. One population of *A. munzii* was partially eliminated in 1982 by the realignment of the Interstate 15 freeway corridor in the Temescal Valley of Riverside County (Roberts 1993a). Another population was reduced when a portion of its habitat was inundated for a reservoir (California Department of Fish and Game 1989).

Discing for the purpose of weed abatement or dry land farming results in habitat loss and population declines of *A. munzii*. Discing, combined with impacts from off-road vehicle activity, has recently affected over 30 percent of the population of *A. munzii*. (Steve Boyd and Dave Bramalet, pers. comm., 1993)

Of 12 known populations of *A. munzii*, 3 occur within major proposed development projects. One of these proposed projects will eliminate all of the *A. munzii* and much of its potential

habitat within the project boundaries (Roberts 1993a).

Over 25 percent of *B. filifolia* populations have been eliminated by urbanization and agricultural conversion. One of the two largest populations of this species occurs in the Vista-San Marcos-Carlsbad region of northwestern San Diego County; nearly half of this population has been eliminated (California Native Diversity Data Base 1993; Wayne Armstrong, Palomar College, pers. comm., 1993). Over the last 15 years, nearly 60 ha (150 ac) of occupied habitat containing over 80,000 plants have been eliminated in the cities of San Marcos and Vista (CNDDDB 1992; Taylor and Burkhart 1992; Wayne Armstrong, pers. comm., 1993). Urbanization continues to be the most significant threat to this species. Over 25 percent of the remaining populations of *B. filifolia* in San Diego and Riverside Counties are currently within proposed or approved development projects. It is probable that the only known population of *B. filifolia* reported for San Bernardino County in nearly 70 years will be removed by a major pipeline project (Robert Thorne, Rancho Santa Ana Botanical Garden, pers. comm., 1993; Edna Rey, U.S. Fish and Wildlife Service, pers. comm., 1993).

The only population of *B. filifolia* known to occur on Federal land was recently discovered within an abandoned weapons impact area on Camp Pendleton Marine Corps Base in San Diego County (Dawn Lawson, pers. comm., 1993).

At least one population of *B. filifolia* is associated with mesic grasslands that occur in association with vernal pools. This population occurs on 26 ha (65 ac) of habitat located near downtown San Marcos in San Diego County. Although the site is not currently within a planned project, the landowner intends to develop the site (Wayne Armstrong, pers. comm., 1993). This area also contains a small population of *N. fossalis* and a diverse number of other sensitive plant taxa.

Vernal pools have undergone an extraordinary reduction in number and have nearly been eliminated in Los Angeles, Orange, and San Diego Counties, California, and greatly reduced in Riverside County. In San Diego County, over 97 percent of vernal pool habitat occupied, in part, by *N. fossalis*, had been lost by 1990 (Bauder 1986, Oberbauer and Vanderweir 1991).

Loss estimates for vernal pools and vernal wetlands in Riverside County are less certain and are based on the status of soil types that support these kinds of habitat. The Service estimates that about 12,800 ha (32,000 ac) in the Perris, western San Jacinto, and Menifee Valleys were historically dominated by alkali scrub, alkali playa, alkali grassland, or vernal pool plant communities and contained significant populations of *B. filifolia*, *A. coronata* var. *notatior*, and *N. fossalis*. About 75 percent of this area is currently under a combination of intensive cultivation, urbanization, or channelization; is being filled; or is otherwise highly disturbed. A significant portion of the remaining 2,800 ha (7,000 ac) has been disturbed (Tierra Madre Consultants 1992, Roberts 1993b).

Extant populations of *A. coronata* var. *notatior*, *B. filifolia*, and *N. fossalis* are associated with the San Jacinto River and a tributary of Old Salt Creek just west of the city of Hemet. Much of this area has been subject to dry land farming or irrigated farming at some time during the last 100 years. However, a 5-year drought contributed significantly to a reduction in agricultural activity, particularly along the San Jacinto River. Conversely, in some areas, the soils have routinely been too wet and too alkaline for dry land farming. Both of these factors have contributed to the continued existence of these taxa in this area.

Major commercial and urban development, transportation, and flood control projects have been proposed in General and Specific Plans for both the San Jacinto River Valley and the area west of Hemet. According to documents on file with the County of Riverside and the City of Perris, these proposals will

result in over 19,000 new residential units, as well as hotel and commercial developments encompassing over 3,200 ha (8,000 ac) (Riverside County Planning Department 1991; Louis Massey, Department of Planning, City of Perris, pers. comm., 1993; Mark Goldberg, City of Hemet, pers. comm., 1993). These projects will reduce potential habitat for *A. coronata* var. *notatior*, *N. fossalis*, and *B. filifolia* over 1,400 ha (3,500 ac) (Roberts 1993b). These projects will destroy over 45 percent of the *A. coronata* var. *notatior* populations and at least 70 percent of the *N. fossalis* populations within the project areas.

Although the urbanization that will result from these major projects and others associated with the cities of San Jacinto and Hemet may not occur for 2 to 5 years, these same areas are more imminently threatened by a recent increase in pipeline construction, dry land farming, and weed abatement activities.

Three pipeline projects have recently destroyed vernal pool, alkali grassland, and alkali playa habitat and directly impacted several populations of *A. coronata* var. *notatior*, *N. fossalis* and at least one historical site for *B. filifolia* in the San Jacinto River floodplain near Hemet (Roger Turner, Eastern Municipal Water District, pers. comm., 1992, 1993; Tierra Madre Consultants 1992).

In 1993, over 200 ha (500 ac) of occupied or potential habitat for *A. coronata* var. *notatior*, *B. filifolia*, and *N. fossalis* were disced for weed abatement or fire suppression purposes (Roberts 1993b). In June 1993, an additional 80 ha (200 ac) of habitat containing *A. coronata* var. *notatior* and *N. fossalis* were disced and seeded for dry land farming (Bill Sweeney, landowner, pers. comm., 1993). At least 13 stands of *A. coronata* var. *notatior* have been adversely modified since 1990, including 2 of the largest. This has resulted in the potential loss of nearly 14 percent of the plants (Roberts 1993b).

Navarretia fossalis also occurred historically in the vicinity of Murrieta Hot Springs in Riverside County during the 1920's (Spencer, *in litt.*, 1993). Much of the Murrieta Hot Spring area has been urbanized or converted to agriculture resulting in a significant reduction and fragmentation of potential *N. fossalis* habitat (Service, unpublished data).

In San Diego County, *N. fossalis* occurs within vernal pool complexes (Bauder 1986, California Native Diversity Data Base 1993, Hogan and Belk 1992). These areas have been and continue to be impacted by urbanization and agricultural conversion (Bauder 1986; Nancy Gilbert and Ellen

Berryman, U.S. Fish and Wildlife Service, pers. comm., 1993).

The largest concentration of *N. fossalis* occurs on Otay Mesa in San Diego County. At least 37 proposed Precise Plans and Tentative Maps for development have been filed pursuant to the California Environmental Quality Act for this area. These plans encompass about 80 percent of the undeveloped portion of the mesa within the jurisdiction of the city of San Diego and virtually all but four of the remaining vernal pool complexes. Several of these projects will impact *N. fossalis*. At least one major transportation project has been proposed for Otay Mesa and could potentially impact vernal pools that are occupied by *N. fossalis* (California Department of Transportation 1993).

Navarretia fossalis are found on Federal lands managed by the Navy: Miramar Naval Air Station and Camp Pendleton Marine Corps Base. These lands are used, in part, for military training activities that involve off-road vehicle maneuvers that adversely impact this species (Hogan and Belk 1992).

Trash dumping has also degraded vernal pools in San Diego County. Chunks of concrete, tires, refrigerators, furniture, and other pieces of garbage or debris have been found in pools containing *N. fossalis*. This trash crushes or shades vernal pool plants, disrupts the hydrologic functions of the pool, and, in some cases, may release toxic substances.

Vernal pools in Riverside and San Diego Counties and, to a lesser extent, the alkali wetland habitats of Riverside County have also been degraded by off-road vehicles. These vehicles compact soils, crush plants when water is present, cause turbidity, and leave deep ruts. This type of damage may alter the microhydrology of the pools. Dirt roads that go through or adjacent to pools are widened as motorists try to avoid mud puddles, and, in this way, the pools are gradually destroyed.

The vernal pool, alkali grassland, alkali playa, and alkali sink habitats upon which *N. fossalis* and *A. coronata* var. *notatior* and, to a lesser extent, *B. filifolia* depend are also vulnerable to indirect destruction due to an alteration of the supporting watershed. An increase in water due to urban run-off leads to increased inundation and makes pools vulnerable to invasion by marshy plant species resulting in decreased abundance of obligate vernal pool taxa. At the other extreme, some pools and alkali wetlands have been drained or blocked from their source of water and have shown an increased

domination by upland plant species. Of the species considered herein, *N. fossalis* is the most vulnerable to alterations in hydrology.

Development projects adjacent to vernal pools and alkali wetlands are often responsible for adverse alterations in drainage. Hydrological alterations are sometimes a result of agricultural development, or a combination of urban development and agriculture. This situation is exemplified by recent activities near Hemet in Riverside County, California. In 1989, drainage structures were constructed within alkali grassland and vernal pools west of Hemet in association with an Auto Mall (Mark Goldberg, pers. comm., 1993). These structures have significantly reduced standing water and are responsible for the gradual drying of wetland vegetation as evidenced by relic stands of *Eleocharis palustris* and other obligate wetland species (Wayne Ferren, University of California, Santa Barbara, pers. comm., 1993). Historically, wetlands have been drained for agriculture. In this case, the land becomes suitable for urban development.

Livestock grazing typically changes the composition of native plant communities by reducing or eliminating those species that cannot withstand grazing and trampling and by enabling more resistant (usually non-native) species to increase in abundance. Taxa that were not previously part of the native flora may be introduced and flourish under a grazing regime and may reduce or replace native species through competition for resources. Plants within vernal pools or adjacent alkali grasslands, plays, or scrub habitats may be trampled and killed or grazed prior to seed production.

B. Overutilization for commercial, recreational, scientific, or educational purposes. Overutilization is not currently a known threat factor for the four taxa considered herein.

C. Disease or predation. Neither disease nor natural predation are known to be a factor for the four plant taxa. Cattle grazing occurs on Otay Mesa in areas where several vernal pool complexes contain *N. fossalis*. Intensive sheep grazing occurs west of Hemet and along the San Jacinto River in habitat occupied by *N. fossalis*, *A. coronata* var. *notatior*, and *B. filifolia*. *A. munzii* is not a forage plant utilized by domestic livestock, so far as can be determined by the Service.

D. The inadequacy of existing regulatory mechanisms. Existing regulatory mechanisms that could provide some protection for these species include: (1) listing under the

California Endangered Species Act; (2) consideration under the California Environmental Quality Act; (3) implementation of conservation plans pursuant to the State of California's Natural Community Conservation Planning Act of 1991; (4) section 404 of the Federal Clean Water Act; (5) occurrence with other species protected by the Federal Endangered Species Act; (6) land acquisition and management by Federal, State, or local agencies, or by private groups and organizations; (7) local laws and regulations; and (8) Mexican law.

The California Fish and Game Commission has listed *B. filifolia* as endangered and *A. munzii* (= *A. fimbriatum* var. *munzii*) as threatened under the Native Plant Protection Act (NPPA) (Div. 2, chapter 10, section 1900 et seq. of the California Fish and Game Code) and the California Endangered Species Act (CESA) (Div. 3, chapter 1.5, section 2050 et seq.). *A. coronata* var. *notatior* and *N. fossalis* are included on Lists 1A, 1B, or 2 of the California Native Plant Society's Inventory (Smith and Berg 1988), which, in accordance with section 1901, chapter 10 of the California Department of Fish and Game Code, makes them eligible for State listing. Although NPPA and CESA both prohibit the "take" of State-listed plants (chapters 10 and 1.5, sections 1908 and 2080, respectively), 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 Department 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, section 1913).

In addition, development proposals in Carlsbad (San Diego County) and in the Gavilan Hills (Riverside County) that involve direct impacts to *A. munzii* and *B. filifolia* have proceeded without notification to with the Department (Roberts 1993(a); Jim Dice, California Department of Fish and Game, pers. comm., 1993). In another case, a landowner disced a stand of *N. fossalis* growing with the State-listed *Orcuttia californica* for fire control without notifying the California Department of Fish and Game (Howard Windsor, Riverside County Fire Department, pers. comm., 1993).

The majority of the known populations of the four taxa considered herein occur on privately owned land. 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 *A. munzii*, *A. coronata* var. *notatior*, *B. filifolia*, and *N. fossalis*. Required biological surveys are often inadequate and project proponents may ignore the results of surveys if occurrences of sensitive species are viewed as a constraint on project design. Mitigation measures used to condition project approvals are essentially experimental and fail to adequately guarantee long-term protection of sustainable populations. Relocation attempts have failed. Project designs have also failed to provide an adequate buffer zone around sensitive plant populations to protect their long-term viability (WESTEC 1988 D. Bramlet, in litt., 1992; Hogan and Belk 1992, S. Boyd, pers. comm., 1993 M. Simovich, pers. comm., 1993).

Even though impacts to rare plant taxa including *N. fossalis*, *B. filifolia*, and *A. coronata* var. *notatior* were considered significant under CEQA when several pipeline projects and Specific Plans were proposed in Riverside County, California, only *A. coronata* var. *notatior* was consistently considered in the environmental impact analyses. These projects proposed either no or inadequate mitigation for impacts to sensitive plant taxa (D. Bramlet, in litt., 1992; Roberts 1993b). In another case, a major development in San Marcos (San Diego County) resulted in a 70 percent reduction in *B. filifolia* habitat. Although 5 ha (12 ac) were set aside for preservation of this species, the preserve is surrounded by residential development, has inadequate buffers, and is poorly configured (WESTEC 1988).

The State of California has established the Natural Community Conservation Planning (NCCP) program to address the conservation needs of natural ecosystems throughout the State. The initial focus of this program is the coastal sage scrub community. *A. munzii* has been included as one of the species for consideration under the Coastal Sage Scrub NCCP Program. However, only 3 of 12 populations of *A. munzii* that occur on private lands have been enrolled in this voluntary program. At the present time, no plans have been completed or implemented, and no protection is currently provided by the NCCP program to the taxa considered herein.

Under section 404 of the Clean Water Act, the U.S. Army Corps of Engineers (Corps) regulates the discharge of fill into waters of the United States, including navigable waters, wetlands (e.g., vernal pools), and other waters. The Clean Water Act requires project proponents to obtain a permit from the

Corps prior to undertaking many activities (e.g., grading, discharge of soil or other fill material) that would result in the fill of wetlands under the Corps' jurisdiction. The Corps promulgated Nationwide Permit Number 26 (see 33 CFR 330.5(a)(26)) to address fill of isolated or headwater wetlands totalling less than 4 ha (10 ac). Under Nationwide Permit 26, proposals that involve the fill of wetlands less than 0.4 ha (1 ac) are considered authorized. Where fill would adversely modify between 0.4 to 4 ha (1 to 10 ac) of wetland, the Corps circulates a predischarge notification to the Service and other interested parties for comment to determine whether or not an individual permit should be required for a proposed fill activity and associated impacts.

Individual permits are required for the discharge of fill material that would fill or adversely modify greater than 4 ha (10 ac) of wetlands. The review process for the issuance of individual permits is more rigorous than for nationwide permits. Unlike nationwide permits, an analysis of cumulative wetland impacts is required for individual permit applications. Resulting permits may include special conditions that require the avoidance or mitigation of environmental impacts. On nationwide permits, the Corps has discretionary authority to require an applicant to seek an individual permit if the Corps believes that the resources are sufficiently important, regardless of the wetland's size. In practice, the Corps rarely requires an individual permit when a project would qualify for a nationwide permit, unless a threatened or endangered species or other significant resources might be adversely affected by the proposed activity.

Atriplex coronata var. *notatior* and *N. fossalis* could potentially be affected by projects requiring a permit from the Corps under section 404 of the Clean Water Act. Although the objective of the Clean Water Act is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (33 U.S.C. 1341 *et seq.*), which include navigable and isolated waters, headwaters, and adjacent wetlands, no specific provisions adequately address the need to conserve candidate species such as those considered herein.

In Riverside County, the Corps has not required a permit or mitigation for filling of wetland habitat occupied by *A. coronata* var. *notatior*, *N. fossalis*, or *B. filifolia* in instances where the land had previously been used for agriculture or where the wetland was determined not to be within the jurisdiction of the Corps. The Corps has indicated a lack of

certainty over whether hydric soils existed on the site, even though hydric vegetation and hydrologic features were present (Service, *in litt.*, 1993). Even if the Corps establishes jurisdiction under the Clean Water Act over vernal pools, this does not ensure their protection. At least two vernal pool complexes under Corps jurisdiction in San Diego County have been destroyed or degraded without a section 404 permit (Jim Dice, pers. comm., 1993; Carrie Phillips, U.S. Fish and Wildlife Service, pers. comm., 1993).

The Endangered Species Act of 1973, as amended, (Act) may incidentally afford protection to the species under consideration in this proposal if they co-exist with species already listed as threatened or endangered under the Act. *Pogogyne abramsii* (San Diego mesa mint), *Pogogyne nudiscula* (Otay Mesa mint), *Orcuttia californica* (California Orcutt grass), *Eryngium aristulatum* var. *parishii* (San Diego button celery), and the Riverside fairy shrimp (*Streptocephalus wootoni*) are listed as endangered under the Act and occur in the same habitat as several of the taxa considered in this proposal. However, these species are generally not found in the same vernal pool complexes as the taxa considered in this proposal. *N. fossalis* co-exists with other listed species in only seven vernal pool complexes (one in Riverside County, six in San Diego County).

The Stephens' kangaroo rat (*Dipodomys stephensi*) is listed as endangered and the coastal California gnatcatcher (*Polioptila californica*) is listed as threatened under the Act. These species occur in coastal sage scrub (gnatcatcher) and grassland (kangaroo rat) habitats. Although *A. munzii* is known from similar habitats, less than 30 percent of its population overlaps known populations of these listed animals. Where overlap does occur, the *A. munzii* populations are either already preserved or potentially protected from development by other regulations. However, in these cases, *A. munzii* is still threatened by off-road vehicle activity and exotic plant species.

Land acquisition and management by Federal, State, or local agencies or by private groups and organizations has contributed to the protection of some localities inhabited by the taxa under consideration in this proposal. However, as discussed below, these efforts are often directed at other species and are inadequate to assure the long-term survival of the taxa considered in this proposal.

Allium munzii is found in the Cleveland National Forest and is recognized by the Forest Service as a

sensitive species (Forest Service 1992). The Forest Service has policies to protect sensitive plant taxa, including attempting to establish these species in suitable or historic habitat, and encouraging land ownership adjustments to acquire and protect sensitive plant habitat. To this end, the Forest Service (1992) has released a Management Guide for *A. munzii*. However, only a portion of a single population actually occurs within the Cleveland National Forest, and it continues to be threatened by off-road vehicle activity.

The Service recently entered into a Memorandum of Understanding (MOU) with local jurisdictions in Riverside County, the California Department of Fish and Game, and the Corps concerning channelization of the San Jacinto River and protection of *A. coronata* var. *notatior* habitat along the river. The purpose of this MOU is to reconcile conflicts between the conservation of this floodplain species and proposed flood control measures associated with major urban development plans. New information on the distribution of *A. coronata* var. *notatior* indicates that less than 10 percent of its population would be protected in the project area. The MOU does not address the conservation of *N. fossalis*, *B. filifolia*, or other rare plant taxa that also occur within the project area. The proposed project could result in significant urban development and hydrological alterations that will contribute to the decline of all these taxa. The MOU has no binding control over private land use. In 1993, about 160 ha (400 ac) within a potential preserve area for *A. coronata* var. *notatior* were disced, apparently as weed abatement. It is noteworthy that the location of these 160 ha (400 ac) coincides with the location of proposed development project areas (Roberts 1993b).

At least two of the taxa considered herein occur within the San Jacinto Wildlife Preserve, which is managed by the State of California. Although this preserve provides protection from urbanization and agriculture, it was originally established to maintain waterfowl hunting along the San Jacinto River. In meeting this objective, a significant area of habitat for the taxa considered in this proposal has been converted into waterfowl habitat and planted with exotic grasses as food for migrating waterfowl. Habitat within the preserve is also threatened, in part, with destruction from construction of utility lines (Metropolitan Water District of Southern California 1992).

The Santa Rosa Plateau Preserve is managed by The Nature Conservancy and contains the largest remaining population complex of *B. filifolia* and a single, small population of *N. fossalis*. Although these populations are managed for long-term protection and viability, they represent only a fraction of the range of either species and do not adequately ensure the continued existence of these species.

The County of Riverside has initiated the preparation of a Multi-Species Habitat Conservation Plan (MSHCP). Although the intent of this plan is to identify and acquire areas with high biological diversity and sensitive species, the program is focused on animal species. Plant taxa are not well represented. The MSHCP has identified potential acquisition areas and has made limited land acquisitions. These areas, as currently proposed, will not provide for the long-term survival of *A. munzii*, *N. fossalis*, or *B. filifolia*. The largest known *A. coronata* var. *notatior* population is within a potential acquisition area. However, this site is still threatened by seasonal agricultural activities.

Local laws and regulations potentially offer some protection to species considered within this proposal but these laws and regulations are subject to overriding considerations, are seldom enforced, and, in some cases, are conflicting. For example, the city of Hemet General Plan requires that biological surveys be conducted at sites that may contain sensitive plants prior to alteration of a site for development. However, the City has also adopted an ordinance that requires vacant land to be cleared for weed abatement (Ron Wrench, City of Hemet, Fire Department, pers. comm., 1993). This activity has contributed to the decline of *A. coronata* var. *notatior*, *N. fossalis*, and other sensitive plant species for which the City general plan requires surveys.

Habitat in Riverside County for *A. coronata* var. *notatior*, *N. fossalis*, and *B. filifolia* has been degraded by discing for weed abatement and fire management purposes. County ordinances require that parcels smaller than 2 ha (5 ac) and up to 30 meters (100 feet) adjacent to roads be cleared to reduce the potential for fire (Howard Windsor, Riverside County Fire Abatement, pers. comm., 1993). These activities have contributed to the decline of *N. fossalis* and the Federal endangered *Orcuttia californica*. In some cases, landowners have exceeded the clearing requirements resulting in additional reduction of sensitive plant

populations and the adverse modification of their habitat.

Navarretia fossalis also occurs in northwestern Baja California, Mexico. The Service is not aware of any existing regulatory mechanisms in Mexico that would protect this taxon or its habitat. Although Mexico has laws that could provide protection to rare plants, these laws are not easily enforced.

E. Other natural or manmade factors affecting their continued existence.

Non-native species of grasses and forbs have invaded many of southern California's plant communities. Their presence and abundance are often an indirect result of habitat disturbance from grazing, development, mining, discing, and alteration of hydrology. All four plant taxa considered in this proposal are subject to displacement by such alien plant species.

Many vernal pools on Otay Mesa and in San Marcos (San Diego County) have become dominated by *Lolium perenne*. This alien plant species is tolerant of inundation and displaces native species such as *N. fossalis* and *B. filifolia*. Other non-native grass species such as *Avena barbata* and *Bromus rubens* are dominant on the clay soils required by *A. munzii*. In Riverside County, *Crypsis niliaca*, an aggressive alien grass, has been seeded as a food source for migratory waterfowl along the San Jacinto River. This species is becoming widespread and has replaced or is in the process of replacing native vernal pool and other native species, including *N. fossalis*, *B. filifolia*, and *A. coronata* var. *notatior*, on the San Jacinto Wildlife Preserve and other areas west of Hemet (D. Bramlet, *in litt.*, 1992).

The taxa under consideration in this proposal are highly reliant on seasonal rainfall. Drier conditions, such as those that prevailed from 1986 to 1992, reduce the number of individuals in populations. Climatic conditions stress species and reduce germination and survival rates. Negative effects of habitat loss and degradation from other factors including development, discing, and grazing, when combined with climatic conditions, increase the level of threat to the involved species.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by these four taxa in determining to propose this rule. Based on this evaluation, the Service finds that *Allium munzii* and *A. coronata* var. *notatior* are in danger of extinction throughout all or a significant portion of their ranges. Both taxa are threatened by urbanization and agricultural development, off-road vehicle use, trampling and grazing by

cattle and sheep, and competition from exotic plant taxa. *A. munzii* is also threatened by clay mining activities. *A. coronata* var. *notatior* is threatened by alteration of hydrology of its vernal pool and alkali vernal wetland plains habitats. Therefore, the preferred action is to list these taxa as endangered.

For reasons discussed below, the Service finds that *B. filifolia* and *N. fossalis* are likely to become endangered species in the foreseeable future throughout all or a significant portion of their ranges. Therefore, the preferred action is to list these taxa as threatened. While many populations of *B. filifolia* are threatened by urbanization and agricultural development, trampling, grazing, and competition from exotic plant taxa, the Service finds that threatened status is appropriate for *B. filifolia* because the largest remaining populations are protected. The Service finds that threatened status is appropriate for *N. fossalis* because, while many populations are threatened by urbanization and agricultural development, alteration of hydrology of its vernal pool habitat, trampling, and competition from exotic plant taxa, this taxon has demonstrated resilience to some forms of disturbance and occurs in enough populations that it is not in immediate danger of extinction. Except for *A. coronata* var. *notatior*, critical habitat is not being proposed for these taxa for the reasons discussed below.

Critical Habitat

As defined by section 3(5)(A) of the Act, the term "critical habitat" for a threatened or endangered species means—(i) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of this Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed . . . upon a determination by the Secretary that such areas are essential for the conservation of the species.

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 a taxon is listed. The Service's regulations (50 CFR 424.12(a)(1)) state that designation of critical habitat is not prudent when one or both of the following situations exist: (1) the species is threatened by taking or other human activity and identification of

critical habitat can be expected to increase the degree of such threat to the species; or (2) such designation of critical habitat would not be beneficial to the species.

Critical habitat is not determinable if insufficient information exists to perform an economic impact analysis of designating a particular area as critical habitat or if the biological needs of the species are not sufficiently well known to permit identification of an area as critical habitat (50 CFR 424.12(a)(2)).

The Service finds that designation of critical habitat is not prudent at this time for *A. munzii* and *B. filifolia*. Most populations of *A. munzii* and *B. filifolia* are on privately owned lands with little or no Federal involvement. The additional protection provided by the designation of critical habitat is achieved through section 7. Therefore, the designation of critical habitat for these two taxa would not appreciably benefit the species. Identification of critical habitat is also expected to increase the degree of threat from human activity for these two taxa. Publication of precise maps and descriptions of critical habitat could result in additional habitat destruction through trampling, discing, and grading. Unregulated grazing activity, which results in trampling of habitat by sheep or cattle, may be encouraged to reduce habitat viability.

In several cases, after a species has been identified and located on a site, the landowner has elected to disc or otherwise alter the site. A number of these alterations have occurred and could represent efforts to eliminate sensitive resources that could pose a constraint to future development. In 1986, one land owner hired a biological firm to identify *A. munzii* localities on a specific property in Riverside County. After the report was released, areas of clay soil (including those with *A. munzii* populations) on the parcel were disced (Department 1989). In another case in Los Angeles County, after a population of *B. filifolia* was identified and well publicized in Glendora, the site was disced for fire control (Swinney 1991).

The largest remaining population of *B. filifolia* occurs on the Santa Rosa Plateau, which is managed by The Nature Conservancy. The Nature Conservancy is adequately managing the mesic grassland habitat within the preserve for the long-term preservation of *B. filifolia* and other sensitive plant species. Although the Service finds that the area is essential to the conservation of *B. filifolia*, designation of critical habitat at the Santa Rosa Plateau Preserve would not appreciably benefit

the species. No Federal activities are expected to occur that would be the basis for formal consultation under section 7 of the Act. It is primarily through this means that added protection is provided to listed species through a critical habitat designation.

Based on the information discussed above, the Service finds that it is not prudent at this time to designate critical habitat for *A. munzii* and *B. filifolia* because such a designation may increase the degree of threat from trampling, discing, or other destructive activities and is unlikely to appreciably benefit the conservation of these taxa. Protection of habitat for *A. munzii* and *B. filifolia* will be addressed through the recovery process and, if Federal involvement occurs, through the section 7 consultation process.

The Service is in the process of defining critical habitat and determining more clearly what the ecological requirements and constituent elements are for *N. fossalis*. The Service may find that determination of critical habitat is not prudent for this taxon, however, at this time designation of critical habitat is not determinable.

The Service is proposing to designate critical habitat in Riverside County for *A. coronata* var. *notatior*. Although this designation is likely to increase the degree of threat to this taxon from human-related activities, the Service finds that the benefits of the additional protection provided through recognition and requirements for section 7 compliance associated with a critical habitat designation exceed the risk of vandalism and other destructive activities. *A. coronata* var. *notatior* and its habitat in Riverside County are resilient to intermittent discing and agricultural activities as indicated by the history of disturbance and reestablishment of this taxon in the area west of Hemet and along the San Jacinto River.

The Service is required to base critical habitat designations on the best scientific data available, after taking into consideration the probable economic and other impacts of making such a designation (50 CFR 424.12(a)). In determining what areas to propose as critical habitat, the Service considers those physical and biological features that are essential to the conservation of the species and that may require special management considerations or protection. Such requirements include, but are not limited to, the following: (1) space for individual and population growth; (2) food, water, air, light, minerals, or other nutritional or physiological requirements; (3) cover or shelter; (4) sites for breeding,

reproduction, rearing of offspring, germination, or seed dispersal; and, generally, (5) habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species. The Service also considers primary constituent elements of critical habitat that may include, but are not limited to, the following: roost sites; nesting grounds; spawning sites; feeding sites; seasonal wetlands or drylands; water quality or quantity; host species; plant pollinators; geological formation; vegetation type; and specific soil types.

Critical habitat is being proposed for *A. coronata* var. *notatior* to include alkali grassland, alkali sink, and vernal pools in Riverside County, California. The following areas are proposed as critical habitat:

1. Approximately 1,266 ha (3,165 ac) located along 10 km (6 miles) of the San Jacinto River from just above Davis Road south by southwest to Interstate 215.

2. About 272 ha (680 ac) along a tributary to Old Salt Creek, west of the town of Hemet, between Florida Avenue, Ryan Airfield, and the Atchison Topeka and Santa Fe Railroad tracks.

A total of approximately 1,540 ha (3,845 ac) are being proposed as critical habitat. These areas contain the majority of the remaining known populations of *A. coronata* var. *notatior* and potentially suitable habitat for this taxon in Riverside County. Both of the proposed critical habitat areas contain (or with recovery will contain) suitable alkali grassland, alkali scrub, alkali sink, or vernal pool habitat for this taxon. The distribution of *A. coronata* var. *notatior* is patchy within this habitat and is expected to shift over time. Because of these spatial and temporal factors, it is important to protect the watershed and microhabitat diversity upon which this taxon depend. Both areas contain unoccupied habitat or former (degraded) habitat that is needed for recovery of ecosystem integrity and to increase or maintain populations of this taxon.

Floodplains (seasonal wetlands) dominated by alkali playas, alkali scrub, alkali grasslands, and vernal pools represent the primary constituent elements of critical habitat for *A. coronata* var. *notatior* with respect to its survival needs (hydrology, soils, and associated species). The majority of these habitats occur in association with the Willows soils series (as defined by the Soil Conservation Service and Bureau of Indian Affairs (1971)) but some occur within the Waukena, Traver, Domino, and Chino soils series. These habitats can recover from dry land farming activities that are left fallow and

undisturbed for a number of years. As additional information is obtained, designation of other critical habitat areas may be proposed.

Atriplex coronata var. *notatior* requires seasonal inundation and/or flooding. The seasonal wetland habitats that it occupies are dependent on adjacent transitional wetlands and marginal wetlands within the watershed. These adjacent habitats would not be adequately protected under the listing prohibitions of the Act. Designation of critical habitat will benefit *A. coronata* var. *notatior* by providing additional protection to the ecosystem upon which it depends through recognition and section 7 consultation procedures (where applicable).

Section 4(b)(8) requires, for any proposed or final regulation that designates critical habitat, a brief description and evaluation of those activities (public or private) that may adversely modify such habitat or may be affected by such designation.

Actions that could adversely affect critical habitat for *A. coronata* var. *notatior* include: (1) destruction of alkali grassland, playa or scrub, and vernal pool habitat; (2) destruction of the hard pan layer that is responsible for a perched water table; or (3) increases in human-associated disturbance. Specific actions that could cause these effects are stream channelization, draining of ponds, water diversion, sheep grazing, discing for weed abatement, and conversion to agriculture or residential development. Complete or major destruction of the alkaline floodplain environment would significantly reduce or eliminate *A. coronata* var. *notatior* from the affected area and further endanger this species throughout the remainder of its range and preclude opportunities for recovery. Stream channelization would remove flooding that is necessary, in part, for seed dispersal. Draining winter ponds would alter the hydrology and render the habitat unusable and increase the opportunity for exotic and upland plants to invade. Sheep grazing selectively removes native species, damages plants through trampling, and encourages the establishment of invasive exotic plant species. Discing gradually reduces the viability and diversity of the habitat, particularly the perennial plant component, and increases the opportunity for weedy exotic plant species to invade and alter the habitat.

At least three Federal agencies (Corps, Environmental Protection Agency (EPA), and the Federal Highway Administration (FHA)) have or may

have jurisdiction and responsibilities within the proposed critical habitat, and section 7 consultations might be required in a number of instances. Known proposals that could require consultation include: channelization of the San Jacinto River; widening of the Ramona Expressway; Metropolitan Water District Inland Feeder and Eastside Reservoir pipeline projects; and a number of specific plans sponsored by the County of Riverside and the City of Perris. These projects have the potential for significant adverse effects on *A. coronata* var. *notatior*. Section 7 consultation procedures usually result in modification, rather than curtailment of such projects.

Section 4(b)(2) of the Act requires the Service to consider economic and other impacts of designating a particular area as critical habitat. The Service will consider these impacts and all additional relevant information obtained during the public comment period or otherwise developed by the Service before finalizing this proposed action.

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 and animals 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) 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 subsequently listed, 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 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 agencies expected to have involvement with *A. coronata* var. *notatior*, *B. filifolia*, and *N. fossalis* include the Corps and the EPA due to their permit authority under section 404 of the Clean Water Act. The Federal Aviation Administration has jurisdiction over areas with vernal pools containing *N. fossalis* near Montgomery Field within the city limits of San Diego and Brown Field on Otay Mesa in San Diego County. This jurisdiction would also apply if any of the taxa considered in this rule are discovered at Perris Airport or Ryan Airport in Riverside County. The FHA will likely be involved through potential funding of highway construction projects near Hemet (Riverside County) and Otay Mesa (San Diego County). *N. fossalis* occurs on Miramar Naval Air Station and on Camp Pendleton Marine Corps Base. These bases will likely be involved through military activities or potential exceeding of Federal lands. The Immigration and Naturalization Service will need to evaluate the effects of its activities on *N. fossalis*, which is known to occur along the international border and could be trampled by persons entering the United States illegally. The Forest Service has jurisdiction over at least a portion of one population of *A. munzii* in Cleveland National Forest.

The Act and its implementing regulations found at 50 CFR 17.61, 17.62, 17.63, 17.71 and 17.72 set forth a series of prohibitions and exceptions that apply to all endangered or threatened plants. With respect to the four plant taxa considered herein, all trade prohibitions of section 9(a)(2) of the Act, implemented by 50 CFR 17.61 and 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, or remove and reduce to possession any such species from areas under Federal jurisdiction. In addition, for plants listed as endangered, the Act makes it illegal to maliciously damage or destroy any such species on Federal lands or remove, cut, dig up, damage, or destroy any such species in knowing violation of any State law or regulation, including criminal trespass laws. Certain

exceptions apply to agents of the Service and State conservation agencies. Seeds from cultivated specimens of threatened plant species are exempt from these prohibitions provided that a statement of "cultivated origin" appears on their containers.

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 plants under certain circumstances. It is anticipated that few trade permits would ever be sought or issued for the taxa considered herein because they are not common in cultivation or in the wild. These species have specific germination and growth requirements including, in some cases, seasonal inundation that would be difficult to recreate in cultivation.

Requests for copies of the requirements and regulations on permits or trade in wildlife and plants and inquiries regarding them should be addressed to the U.S. Fish and Wildlife Service, Ecological Services, Endangered Species Permits, 911 NE., 11th Avenue, Portland, Oregon 97232-4181 (503/231-2063; FAX 503/231-6243).

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 taxa;
 - (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 taxa;
 - (4) Current or planned activities in the subject area and their possible impacts on these species; and
 - (5) Any foreseeable economic and other impacts resulting from the proposed designation of critical habitat, especially for *A. coronata* var. *notatior*.
- 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 the proposal. Such requests must be made in writing and addressed to the Field Supervisor of the Carlsbad Field Office (see ADDRESSES section).

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment or Environmental Impact Statement, 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

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

Author

The primary author of this proposed rule is Fred M. Roberts, Jr. of the Carlsbad 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 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. Section 17.12(h) is amended by adding the following, in alphabetical order under Flowering Plants, to the List of Endangered and Threatened Plants to read as follows:

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

Species		Historic range	Family	Status	When listed	Critical habitat	Special rules
Scientific name	Common name						
FLOWERING PLANTS							
<i>Allium munzii</i> (= <i>A. fimbriatum</i> var. <i>munzii</i>)	Munz's onion	U.S.A. (CA)	Liliaceae	E		NA	NA
<i>Atriplex coronata</i> var. <i>notatior</i>	San Jacinto Valley crownscale	U.S.A. (CA)	Chenopodiaceae	E		17.96(a)	NA
<i>Erodiaea filifolia</i>	Thread-leaved brodiaea	U.S.A. (CA)	Liliaceae	T		NA	NA
<i>Navarretia fossalis</i>	Spreading navarretia	U.S.A. (CA), Mexico	Polemoniaceae	T		NA	NA

4. It is further proposed to amend § 17.96(a) for plants by adding critical habitat of *Atriplex coronata* var. *notatior*

in the same alphabetical order as the species occurs in § 17.12(h).

§ 17.96 Critical habitat—plants.
 (a) * * *

Family Chenopodiaceae. *Atriplex coronata* var. *notator* (San Jacinto Valley crownscale). California, Riverside County (San Bernardino Meridian):

1 San Jacinto River (USGS 7.5' Quads: Lakeview 1979 and Perris 1979)

T4S, R2W NW1/4 sec 5, SW1/4, NE1/4, and SE1/4 sec 6; NW1/4 and W1/2 SW1/4 sec 7

T4S, R3W San Jacinto River and adjacent lands below the 1,430 foot contour in sec. 12; sec. 13, San Jacinto River and adjacent lands commencing at a point 0.2 miles west of the northeast corner of sec. 13, then southwest to a point 0.25 miles east of the southwest corner of sec. 13, E1/2 SE1/4 sec 14; E1/2 SW1/4, NE1/4, W1/2 SE1/4, and NE1/4 SE1/4 sec 23; W1/2 NW1/4 sec 24; N1/2 NW1/4 and SW1/4 NW1/4 sec 26, SE1/4 NE1/4 and S1/2 sec 27; San Jacinto River and adjacent lands east of Perris Valley storm channel in SE1/4 sec 33; N1/2 and SW1/4 sec 34.

T5S, R3W N1/2 NE1/4 sec 4 east of Interstate 215

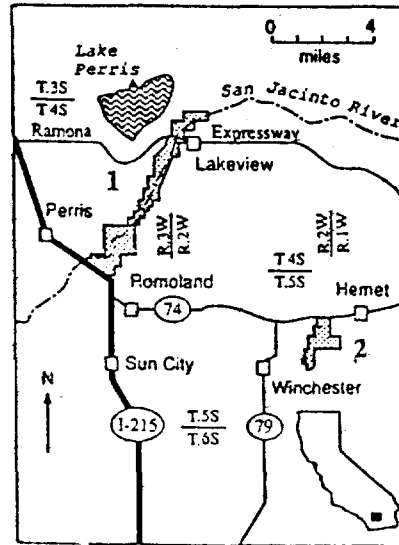
2 Unnamed tributary to Old Salt Creek (USGS 7.5' Quad: Winchester 1979).

T5S, R1W W1/4 and S1/2 NW1/4 SW1/4 sec 18

T5S, R2W SE1/4 NW1/4, E1/2, E1/2 SW1/4, and E1/2 W1/2 SW1/4 sec 13; SE1/4 NE1/4 sec 23; west of Metropolitan Water District canal and north of Atchison Topeka Railroad track in W1/2 sec 24.

Primary constituent elements include floodplain habitat in association with alkali scrub, alkali playa, alkali grassland, and vernal pool plant communities on associated soils

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Dated August 31, 1994.

Mollie H. Beattie,

Director, U S Fish and Wildlife Service.

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