DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Proposed Endangered Status for Five Plants From Sandy and Sedimentary Soils of Central Coastal California

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The U.S. Fish and Wildlife Service (Service) proposes endangered status pursuant to the Endangered Species Act of 1973, as amended (Act), for five plants: *Chorizanthe pungens* var. *hartwegiana* (Ben Lomond spineflower (also previously known as Hartweg's spineflower)), *Chorizanthe pungens* var. *pungens* (Monterey spineflower), *Chorizanthe robusta* var. *hartwegii* (Scotts Valley spineflower), *Chorizanthe robusta* var. *robusta* (robust spineflower), and *Erysimum teretifolium* (Ben Lomond wallflower). These five taxa are imperiled by one or more of the following factors: habitat destruction due to residential development, agricultural development, sand mining, military activities, and encroachment by alien plant species. This proposal, if made final, would extend the Act's protective provisions to these species. The Service seeks data and comments from the public on this proposal.

DATES: Comments from all interested parties must be received by December 23, 1991. Public hearing requests must be received by December 9, 1991.

ADDRESSES: Comments and materials concerning this proposal should be sent to the Office Supervisor, U.S. Fish and Wildlife Service, 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 at the above address (805–644–1766 or FTS 983–6039).

SUPPLEMENTARY INFORMATION:

Background

Chorizanthe pungens var. *hartwegiana* (Ben Lomond spineflower), *Chorizanthe robusta* var. *hartwegii* (Scotts Valley spineflower), and *Erysimum teretifolium* (Ben Lomond wallflower) are endemic to sandstone and mudstone deposits in the Santa Cruz Mountains in Santa Cruz County, California. The Santa Cruz Mountains are a relatively young range composed of igneous and metamorphic rocks overlain by thick layers of sedimentary material uplifted from the ocean floor and ancient shoreline zone (Caughman and Ginsberg 1987). These ancient marine terraces persist as pockets of sandstones and limestones that are geologically distinct from the volcanic origins of the range. Soils that form from these sandstone and limestone deposits tend to be coarse and, at least surficially, lose soil moisture rapidly. While the more mesic slopes of the Santa Cruz Mountains are covered primarily by redwood forest (Zinke 1988) and mixed evergreen forest (Sawyer *et al.* 1988), these drier pockets of sandstone and limestone support what is referred to as maritime coast range ponderosa pine forest (Holland 1986). An open park-like forest of scattered ponderosa pine (*Pinus ponderosa*) occurs with knobcone pine (*P. attenuata*), coast live oak (*Quercus agrifolia*), and, at a few sites, the federally endangered Santa Cruz cypress (*Cupressus abramsii*). These stands intergrade with northern maritime chaparral (Holland 1986), which in this area supports the endemic silver-leaved manzanita (*Arctostaphylos silvicola*) and Schreiber's manzanita (*A. glutinosa*). These unique communities have been described by Thomas (1961), Griffin (1964), and Marangio (1985), and are currently referred to by local botanists as "sandhill parklands" or

"ponderosa pine sandhill" (California Native Plant Society (CNPS) 1986).

As uplift of the Santa Cruz Mountains has proceeded, some of the raised marine terraces of sandstone and limestone were, in turn, buried beneath layers of alluvial materials. Pockets of this alluvial material, referred to as Santa Cruz mudstone, persist as part of this process. In the Scotts Valley area, mudstone outcrops support annual grasses and herbaceous species. These communities have been referred to as annual grasslands and wildflower fields by Holland (1986).

Chorizanthe pungens var. *pungens* (Monterey spineflower) and *Chorizanthe robusta* var. *robusta* (robust spineflower) are endemic to sandy soils of coastal habitats in southern Santa Cruz and northern Monterey Counties. The inner rim of Monterey Bay is characterized by broad, sandy beaches backed by an extensive dune formation. Coastal dune and coastal scrub communities are present, but portions have been impacted by recreational use, urban development, and military activities. Dune communities have also been altered in composition by the introduction of non-native species, especially sea-fig or iceplant (*Carpobrotus* spp.) and European beachgrass (*Ammophila arenaria*), in an attempt to stabilize shifting sands. Just inland from the immediate coast, maritime chaparral occupies areas with well-drained soils, while the coastal plain of the Salinas Valley has been converted from grassland and valley oak woodland to agricultural crops.

Discussion of the Five Taxa Proposed for Listing

In California, the spineflower genus (*Chorizanthe*) in the buckwheat family (Polygonaceae) comprises species of wiry annual herbs that inhabit dry sandy soils, both along the coast and inland. Because of the patchy and limited distribution of such soils, many species of *Chorizanthe* tend to be highly localized in their distribution.

One subsection of the genus referred to as Pungentes and consisting of seven species is distinguished by the following features: The inner and outer tepals (petal-like sepals) are of equal length, and entire or lobed but not fimbriate; filaments free; involucres (whorl of bracts subtending the flowers) 6-toothed with the alternating three shorter, the anterior one slightly long-awned; involucral margins not continuously membranaceous across the sinuses; stamens variable 3–9; plants decumbent to erect with spreading pubescence, distributed mainly on or near the coast from Santa Barbara County northward (Reveal and Hardham 1989).

While three of the seven species in the section Pungentes are still thought to be common, the remaining four species are becoming increasingly rare. Two of these species (*Chorizanthe howellii* and *C. valida*) were proposed for endangered status on March 22, 1991 (56 FR 12318). The remaining two species, *C. pungens* and *C. robusta*, inclusive of their varieties, are subjects of this proposed rule.

Chorizanthe pungens was first described by George Bentham in 1836 based on a specimen collected in Monterey. This taxon was recognized by George Goodman (1934) as the type species in describing the Pungentes section of the genus. At that time, Goodman also recognized *C. punens* var. *hartwegii* as a new combination, based on *C. douglasii* var. *hartwegii* as recognized by Bentham (1856). It was named after Karl Hartweg who collected the type from "dry mountain pastures near Santa Cruz" in 1847.

Chorizanthe pungens var. *hartwegiana* was distinguished from *C. pungens* var. *pungens* by James Reveal and Clare Hardham (1989) after they noticed a distinction between the coastal form and that found inland "in the Ben Lomond sand hills area." Reveal and Hardham were careful to note that the type for *C. pungens* var. *hartwegiana* did not conform with the plant that had been called *C. pungens* var. *hartwegii*. The name *Chorizanthe pungens* var. *pungens* was retained to represent the coastal form of the plant.

Chorizanthe robusta was first described by Charles Parry in 1869 based on a collection he made 6 years earlier "north of Aptos along Monterey Bay". Willis Jepson considered it to be a variety of *C. pungens*, and thus recognized the taxon under the name *C. pungens* var. *robusta* in his Flora of California in 1913. LeRoy Abrams (1944) determined that the taxon was specifically distinct from *C. pungens* and restored the original name of *C. robusta*. In their revision of the genus in 1989, Reveal and Hardham (1989) concurred with Abrams and retained the taxon as *C. robusta*, at the same time placing in synonymy the type of *C. pungens* var. *hartwegii*. Reveal and Hardham noted, however, that the definition of subspecific taxa was still not settled, as while they were convinced that the inclusion of *C. pungens* var. *hartwegii* in *C. robusta* was appropriate, the available specimens of the inland form exhibited a more upright habit and pinkish involucres than the coastal form.

Concurrent with publication of the Reveal and Hardham revision, however, the first collection in over 140 years was made of the inland form that matched Hartweg's original collection made in 1847. Reveal was therefore able to reconfirm its affinity with *Chorizanthe robusta*, while at the same time recognizing the distinctness of this taxon as a variety. Reveal, along with local botanist Randall Morgan, published the name *C. robusta* var. *hartwegii* (Reveal and Morgan 1989).

Upon receiving a petition to list the Scotts Valley spineflower, the taxonomic validity of *Chorizanthe robusta* var. *hartwegii* was questioned by Dr. John Hunter Thomas, professor of biological sciences at Stanford University. To address these concerns, the Service reviewed specimens of var. *hartwegii* and other closely related taxa in the Pungentes subsection of the genus with plant taxonomists at the University of California. The Service's review indicates that, while further taxonomic refinement may be warranted, specimens ascribed to *C. pungens* and *C. robusta* generally fall into five morphologically recognizable phases that also correspond to ecological and geographical patterns. Four of these five morphotypes generally corresponded to *C. pungens* var. *pungens*, *C. pungens* var. *hartwegiana*, *C. robusta* var. *robusta*, and *C. robusta* var. *hartwegii*. The fifth morphotype consists of specimens that have been identified as *C. robusta* or *C. pungens* (Ertter 1990). This proposal, by addressing the subject four varieties of *Chorizanthe*, includes all five morphotypes reviewed.

The Monterey spineflower (*Chorizanthe pungens* var. *pungens*) is distinguished by white (rarely pinkish) scarious margins on the involucral lobes and a prostrate to slightly ascending habit. The aggregate of flowers (heads) tends to be less than 1 centimeter (cm) (0.4 inches (in)) in diameter and either distinctly or indistinctly aggregate.

Monterey spineflower is scattered within coastal dune, coastal scrub, and maritime chaparral communities along and adjacent to the coast of southern Santa Cruz and northern Monterey Counties, and inland to the coastal plain of Salinas Valley. The plant probably has been extirpated from a number of historical locations in the Salinas Valley, primarily due to conversion of the original grasslands and valley oak woodlands to agricultural crops.

The coastal dune and coastal scrub habitats have been impacted, to some degree, by residential development, recreational use, military activities at Fort Ord, and alteration of habitat due to the introduction of non-native species for use in dune stabilization. Other small

scattered occurrences within maritime chaparral habitat may be impacted by residential development and by a realignment of Highway 101.

Ben Lomond spineflower (*Chorizanthe pungens* var. *hartwegiana*) has dark pinkish to purple scarious margins on the involucral lobes and a slightly ascending to erect habit. The heads are 1–1.5 cm (0.4–0.6 in) in diameter and distinctly aggregate.

Ben Lomond spineflower is found on sandy soils that are the basis for the endemic sandhill parkland communities in the Santa Cruz Mountains. The majority of occurrences of Ben Lomond spineflower are found on privately-owned lands. Sand quarrying has resulted in the direct removal of Ben Lomond spineflower habitat, and a currently proposed expansion of operations at Quail Hollow Quarry may eliminate additional populations. Residential development on smaller parcels of privately-owned lands has also contributed to the elimination of Ben Lomond spineflower and fragmentation of the remaining habitat. Certain locations are also known to have been vandalized. Protective management for sandhill parkland communities will be developed for one parcel recently acquired by the County of Santa Cruz and the State of California. A few small populations occur within Big Basin and Henry Cowell State Parks but are currently not under protective management.

The Scotts Valley spineflower (*Chorizanthe robusta* var. *hartwegii*) has rose-pink involucral margins confined to the basal portion of the teeth and an erect habit. The heads are 1–1.5 cm (0.4–0.6 in) in diameter and distinctly aggregate. The plant is endemic to Purisima and Santa Cruz mudstones in Scotts Valley in the Santa Cruz Mountains. Virtually the entire population occurs on three parcels, all in private ownership. One parcel is currently being proposed for a residential development (Harding Lawson Associates 1991). Two other parcels had been planned for development, but were recently sold to a business firm that intends to hold the property for an undetermined period of time. The plant is threatened with the destruction of a portion of currently occupied habitat and with secondary impacts associated with residential and business development including alteration of the remaining habitat by trampling, introduction of non-native species, and alteration of the surrounding hydrologic regime.

Robust spineflower (*Chorizanthe robusta* var. *robusta*) has thin white to pinkish scarious margins along the basal portions of the teeth and an erect to spreading habit. The heads are 1.5–2 cm (0.6–0.8 in) in diameter and distinctly aggregate. The robust spineflower once ranged from Alameda to Monterey Counties, but is currently known only from sandy soils along and adjacent to the coast of southern Santa Cruz County. Populations in coastal dune and coastal scrub habitats have been impacted by residential development, recreational use, and the introduction of non-native species. Management plans have not yet been developed for the robust spineflower at Sunset State Beach where the largest known population is located. Smaller populations near Manresa State Beach and on property owned by the City of Santa Cruz are not currently protected.

Ben Lomond wallflower (*Erysimum teretifolium*) was first collected at Glenwood, Santa Cruz County by Horace Davis in 1914. This plant was described by Alice Eastwood in 1938 as *Erysimum filifolium*, not realizing that this combination had already been applied to another plant (Eastwood 1938). It was therefore renamed *E. teretifolium* in the following year (Eastwood 1939). Ben Lomond wallflower is an annual, or occasionally a biennial, plant of the mustard family (Brassicaceae). Seedlings form a basal rosette of leaves, which then wither as the main stem develops flowers clustered in a terminal raceme. The flowers are a deep yellow with petals 1.25–2.5 cm (0.5–1 in) long; the slender capsule reaches 10 cm (4 in) in length and is covered with three-parted hairs; and the leaves are simple, round, and threadlike—a characteristic that separates this plant from other wallflowers.

Ben Lomond wallflower is endemic to pockets of sandstone soils in the Santa Cruz Mountains. Historical and continuing threats to the Ben Lomond wallflower include the direct removal of habitat by sand quarrying and residential development. Alteration of habitat may also be occurring in the form of an increase in canopy density within the sandhills parklands as a result of fire suppression activities. The only population with a current potential for being protected is on the recently acquired Quail Hollow Ranch site.

Previous Federal Action

Federal government actions for one of these five 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, was presented to Congress on January 9, 1975. In the report, *Erysimum teretifolium* was recommended for threatened status. On July 1, 1975, the Service published a notice in the 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.

The Service published an updated notice of review for plants on December 15, 1980 (45 FR 82480). This notice included *Erysimum teretifolium* as a category 1 candidate (species for which data in the Service's possession are sufficient to support proposals for listing) and *Chorizanthe pungens* var. *pungens* as a category 2 candidate (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). In the September 27, 1985, revised notice of review for plants (50 FR 39526), *E. teretifolium* was again included as a category 1 candidate and *C. pungens* var. *pungens* as a category 2 candidate.

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 *Erysimum teretifolium* because the 1975 Smithsonian report was accepted as a petition. In October 1983, 1984, 1985, 1986, 1987, 1988, 1989, and 1990, the Service found that the petitioned listing of *E. teretifolium* was warranted, but that the listing of this species was precluded by other pending proposals of higher priority. The latest notice, published on February 21, 1990 (55 FR 6184) includes *E. teretifolium* in category 1 and *Chorizanthe pungens* var. *pungens* and *C. pungens* var. *hartwegiana* in category 2.

On May 16, 1990, the Service received a petition from Steve McCabe, president, and Randall Morgan of the Santa Cruz Chapter of the California Native Plant Society to list *Chorizanthe robusta* var. *hartwegii* as endangered. Based on a 90-day finding that the petition presented substantial information indicating that the requested action may be warranted (55 FR 46080), the Service initiated a status review of that taxon. During the course of that status review, it came to the attention of the Service that another

taxon, *Chorizanthe robusta* var. *robusta*, may also warrant listing; therefore, this taxon was also included in the status review. This proposed rule constitutes the Service's 1-year finding that the listing of *Chorizanthe robusta* var. *hartwegii* as endangered is warranted, as well as a finding that the listing of *Erysimum teretifolium* is warranted.

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 *Chorizanthe pungens* Benth. var. *hartwegiana* Reveal & Hardham (Ben Lomond spineflower), *Chorizanthe pungens* Benth. var. *pungens* (Monterey spineflower), *Chorizanthe robusta* Parry var. *hartwegii* (Benth. in A. DC) Reveal & Morgan (Scotts Valley spineflower), *Chorizanthe robusta* Parry var. *robusta* (robust spineflower), and *Erysimum teretifolium* Eastwood (Ben Lomond wallflower) are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat range.* Three of the five taxa proposed herein (*Chorizanthe pungens* var. *hartwegiana, Chorizanthe robusta* var. *hartwegii,* and *Erysimum teretifolium*) are restricted to sandstone and mudstone soils in the Santa Cruz Mountains. Two of the five taxa, *Chorizanthe pungens* var. *pungens* and *Chorizanthe robusta* var. *robusta,* are found only on sandy soils of coastal and near coastal habitats in southern Santa Cruz and northern Monterey Counties. The imminent threat facing these species and their associated habitats is the ongoing and threatened destruction and adverse modification of habitat by one or more of the following: urban development, agricultural development, recreational use, sand mining, dune stabilization projects, and military activities.

Ben Lomond spineflower (*Chorizanthe pungens* var. *hartwegiana*) is confined to outcrops of sandstone soils in the Santa Cruz Mountains, from Boulder Creek south to Felton, and east to Quail Hollow Ranch in the Santa Cruz Mountains. These sandstone soils support several unique plant communities, including the ponderosa pine-dominated sandhill parklands. In the 187Os, limestone quarries began operating in the Bonny Doon area of the Santa Cruz Mountains, as well as in other locations around the county (Caughman and Ginsberg 1987). In more recent years, sand quarrying has replaced limestone mining as a viable economic activity. At least half of the habitat occupied by the Ben Lomond spineflower is on property owned by sand and gravel companies. Operations at a number of quarries, including Kaiser 1 and 2, Olympia, and Quail Hollow, have already extirpated populations of Ben Lomond spineflower (Randall Morgan, botanist, Soquel, California, pers. comm., 1990). Expanded operations are currently being proposed for Quail Hollow Quarry (John Gilchrist and Associates 1990). One parcel (Quail Hollow Ranch) has recently been jointly acquired by the County of Santa Cruz and the State of California and supports a large population of Ben Lomond spineflower as well as other unique species of the sandhill parklands habitat. Another parcel owned by the San Lorenzo Valley Water District also supports several of the unique elements of the sandhill parklands habitat, including the Ben Lomond spineflower. Smaller populations of the Ben Lomond spineflower are also known to occur at the Bonny Doon Ecological Preserve managed by The Nature Conservancy and at Big Basin and Henry Cowell State Parks. These parks, however, have yet to develop management plans for Ben Lomond spineflower.

Monterey spineflower (*Chorizanthe pungens* var. *pungens*) is scattered within coastal dune, coastal scrub, and maritime chaparral communities along and adjacent to the coast of southern Santa Cruz and northern Monterey Counties, and inland to the coastal plain of Salinas Valley. Historically, Monterey spineflower ranged along the coast from southern Santa Cruz County south to northern San Luis Obispo County, and from Monterey inland to the Salinas Valley. Only one collection dating from 1842, however, was made from northern San Luis Obispo County; in recent years, it has not been collected south of Monterey Peninsula. Along the coast of the north side of Monterey Peninsula, human and equestrian use threaten scattered occurrences of Monterey spineflower, and a development is planned for a parcel owned by the Pebble Beach Corporation (Vern Yadon, curator, Museum of Natural History, Pacific Grove, pers. comm., 1991). Monterey spineflower probably has been extirpated from a number of historical locations in the Salinas Valley, primarily due to conversion of the original grassland and valley oak woodland habitat to agricultural crops. One occurrence at Manzanita County Park near Prunedale is currently not protected. A route realignment proposed for Highway 101 in northern Monterey County may impact some scattered occurrences (Morgan, pers. comm., 1991).

Fort Ord probably supports the largest extent of Monterey spineflower. In recent years, road development and construction of an ammunition supply depot on the base have eliminated some Monterey spineflower and fragmented the remaining habitat. As mitigation for recent construction, the military proposed a series of small preserves, ranging in size from 1 to 15 acres, for the purposes of protecting rare species, including the Monterey spineflower. The small size of these preserves, however, is not likely to be sufficient to ensure long-term protection for the plant. The Federal Government has recently announced intentions to close the base at Fort Ord. The impact that base closure will have on the Monterey spineflower cannot be determined at this time.

In southern Santa Cruz County, Monterey spineflower is known to occur at Sunset and Manresa State Beaches, and recently scattered occurrences have been found as far north as Day Valley (Morgan, pers. comm., 1991). Populations at Sunset State Beach may have been inadvertently impacted by trampling and the introduction of non-native species during dune stabilization projects.

The only known extant populations of the Scotts Valley spineflower (*Chorizanthe robusta* var. *hartwegii*) occur in Scotts Valley in the Santa Cruz Mountains north of the city of Santa Cruz. The plant occurs primarily on pockets of Santa Cruz and Purisima mudstones and is associated with annual grasslands and wildflower fields (Reveal and Morgan 1989). These islands of unique substrates are host to a number of rare plants, including a newly discovered species of knotweed ([*Polygonum* sp. nov.) (James Hickman, editor, Jepson Manual Project, Univ. of CA, Berkeley, pers. comm., 1991)). Half a dozen patches of Scotts Valley spineflower are scattered over an area 1.6 kilometers (km) (1 mile) in radius on three parcels in private ownership. The total number of individuals was estimated to be approximately 6,000 in 1989 (California Natural Diversity Data Base (CNDDB) 1990), though being an annual, this number may be expected to fluctuate from year to year. One of the parcels is currently being proposed for residential development (Harding Lawson Associates 1991). Two other

parcels had been planned for development, but were recently sold to a business firm. The firm has indicated that acquisition of the property fits in with their plan for future expansion, but that there are no present plans for developing the property (Krieger 1991). While immediate development of the two parcels may have been delayed by the recent transfer in ownership, the lack of protective management for any portion of the taxon leaves its long-term persistence in doubt.

Robust spineflower (*Chorizanthe robusta* var. *robusta*) historically occurred in sandy to gravelly sites in Alameda and San Mateo Counties southward in the Coast Ranges to Santa Cruz County, and near the coast from southern Santa Cruz County to northern Monterey County. Many of the areas from which collections were made in Alameda and San Mateo Counties have been urbanized, and no new collections have been made from there, or from Monterey County, for 30 years (Ertter 1990). The only known extant populations occur northeast of the city of Santa Cruz on property recently acquired by the city from the University of California, and near Sunset and Manresa State Beaches, approximately 12 miles away. The total number of individuals of the plant is estimated to be less than 7,000 as of 1990. A patch of 300 individuals that had been reported in 1985 from Manresa State Beach could not be relocated in 1990 (CNDDB 1990). Efforts have been started at Sunset State Beach to restore the native dune species by removing the introduced non-native species (Ferreira 1989). If the presence of robust spineflower is taken into consideration in areas targeted for such restoration, impacts to the plant may be avoided.

Ben Lomond wallflower (*Erysimum teretifolium*) is presently known from a dozen scattered occurrences on sandstone deposits in the Santa Cruz Mountains. These sandstone deposits support the unique ponderosa pine sandhill community; the Ben Lomond wallflower seems to prefer sites with loose, uncompacted sand in openings between scattered chaparral shrubs. The Ben Lomond spineflower is found in close proximity with the Ben Lomond wallflower at some locations. With the suppression of wildfires within the Santa Cruz Mountains, the density of woodland within the pine sandhill community has increased, which in turn may reduce the availability of suitable habitat for the Ben Lomond wallflower (CNPS 1986). The largest population of Ben Lomond wallflower contains about ¾ of the total number of known individuals of this species (approximately 5,400 individuals) (Bittman 1986). This population has already been reduced in size by sand quarrying, and ongoing quarrying will likely continue to reduce the size of the population. Of the remaining populations, none comprise over 400 individuals, and about half total less than 100 individuals each (Bittman 1986). Aside from the largest population, several of the smaller populations have also been reduced in size by quarrying, as well as by development of private lots. Occurrences of the wallflower have been repeatedly vandalized in the Bonny Doon area (CNPS 1986). Quail Hollow Ranch, a site which supports less than 300 plants, was recently acquired as a park through the joint efforts of The Nature Conservancy, the County of Santa Cruz, and the State of California.

B. *Overutilization for commercial, recreational, scientific, or educational purposes.* Overutilization is not applicable to the five plants.

C. *Disease or predation.* A population of *Chorizanthe robusta* var. *hartwegii* has been grazed by horses in Scotts Valley. No data exist to substantiate whether grazing threatens this plant.

D. *The inadequacy of existing regulatory mechanisms.* Under the Native Plant Protection Act (Chapter 1.5 sec. 1900 et seq. of the Fish and Game Code) and the California Endangered Species Act (chapter 1.5 sec. 2050 et seq.), the California Fish and Game Commission has listed *Erysimum teretifolium* as endangered. Though both the Native Plant Protection Act and the California Endangered Species Act prohibit the "take" of State-listed plants (chapter 1.5 sec. 1908 and sec. 2080), State law appears to exempt the taking of such plants via habitat modification or land use change by the landowner. After the California Department of Fish and Game notifies a landowner that a State-listed plant grows on his or her property, State law requires only that the landowner notify the agency "at least 10 days in advance of changing the land use to allow salvage of such plant" (chapter 1.5 sec. 1913).

E. *Other natural or manmade factors affecting its continued existence.* The introduction of non-native species to coastal dunes for the purpose of sand stabilization has adversely affected native dune flora, probably including Monterey spineflower and robust spineflower. Such introduced species as European beach grass, sea-fig, and iceplant have invaded dune habitats and in many cases outcompeted the native flora (U.S. Fish and Wildlife Service 1991). While public agencies are now aware of the adverse impacts of introducing non-native species, efforts to restore dune habitats with native species may also result in further impacts to sensitive plants, if not done properly.

Typically, annuals and other monocarpic plants (individuals that die after flowering and fruiting), such as the five plants proposed herein, are vulnerable to random fluctuations or variation (stochasticity) in annual weather patterns and other environmental factors (Huenneke *et al.* 1986). All five of the plants are restricted to habitats of limited distribution within a small geographic range. Scotts Valley spineflower is found on Santa Cruz and Purisima mudstones within a 1-mile radius in Scotts Valley in the Santa Cruz Mountains. Robust spineflower is found in only two locations 12 miles apart from each other in southern Santa Cruz County. All five plants, but particularly Scotts Valley spineflower and Monterey spineflower, are vulnerable to stochastic extinction.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by these taxa in determining to propose this rule. Because these five plants are threatened by one or more of the following factors—urban and agricultural development, recreational use, sand mining, dune stabilization projects, military activities, and extinction from stochastic events—the preferred action is to list *Chorizanthe pungens* var. *hartwegiana, Chorizanthe pungens* var. *pungens, Chorizanthe robusta* var. *hartwegii, Chorizanthe robusta* var. *robusta,* and *Erysimum teretifolium* as endangered.

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 concurrently with determining a species to be endangered or threatened. The Service finds that designation of critical habitat is not prudent for these species at this time. Because the five plants face numerous anthropogenic threats (see Factor A in "Summary of Factors Affecting the Species") and these species occur mostly on private land, the publication of precise maps and descriptions of critical habitat in the **Federal Register** would make these plants more vulnerable to incidents of vandalism and, therefore, could contribute to the decline of these species. The listing of these taxa as

endangered publicizes the rarity of the plants and, thus, can make these plants attractive to researchers, curiosity seekers, or collectors of rare plants. The proper agencies have been notified of the locations and management needs of these plants. Protection of these species' habitats will be addressed through the recovery process and through the section 7 consultation process. The Service believes that Federal involvement in the areas where these species occur can be identified without the designation of critical habitat. Therefore, the Service finds that designation of critical habitat for the five plants is not prudent at this time, because such designation likely would increase the degree of threat from vandalism 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.

Federal activities potentially impacting one or more of the five taxa include road and building construction projects, and perhaps waterfowl management practices on Federal land. Populations of two of the five plants occur, at least in part, on Federal land. Fort Ord, which is managed by the Department of Defense, supports populations of Monterey spineflower on the western portion of the base. If the government proceeds with closure of the base at Fort Ord as recently announced, there may be impacts to the Monterey spineflower that cannot be determined at this time. Monterey spineflower is also thought to occur on the Salinas River National Wildlife Refuge, which is managed by the U.S. Fish and Wildlife Service. Activities relating to the discharge of fill materials into waters of the United States and other special aquatic sites are regulated by section 404 of the Clean Water Act Amendments of 1972, and may affect Ben Lomond spineflower and Ben Lomond wallflower where they occur adjacent to sand quarry operations. The Corps of Engineers would be required to consult with the Service over any section 404 permitting actions that may affect these species.

The Act and its implementing regulations found at 50 CFR 17.61, 17.62, and 17.63 for endangered plant species set forth a series of general prohibitions and exceptions that apply to all endangered plants. With respect to the five plant taxa proposed for listing, 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 in interstate or foreign commerce; remove and reduce to possession any such 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 species on any other area in knowing violation of any State law or regulation, or in the course of any violation of a State criminal trespass law. Certain exceptions apply to agents of the Service and State conservation agencies. The Act and 50 CFR 17.62 and 17.63 also provide for the issuance of permits to carry out otherwise prohibited activities involving endangered plant species under certain circumstances. It is anticipated that few trade permits would ever be sought or issued because the five plant species are not common in cultivation or in the wild. 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, room 432, 4401 North Fairfax Drive, Arlington, Virginia 22203-3507 (703/358-2104 or FTS 921-2104).

Public Comments Solicited

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

(1) Biological, commercial trade, or other relevant data concerning any threat (or lack thereof) to *Chorizanthe pungens* var. *hartwegiana*, *Chorizanthe pungens* var. *pungens*, *Chorizanthe robusta* var. *hartwegii*, *Chorizanthe robusta* var. *robusta*, and *Erysimum teretifolium*;

(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 the 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).

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Author

The primary author of this proposed rule is Constance Rutherford, Ventura Field Office (see **ADDRESSES** section) (telephone 805–644–1766; FTS 983–6039).

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) 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					
*	*	*	*	*	*	
Brassicaceae—Mustard family:						
*	*	*	*	*	*	
Erysimum teretifolium	Ben Lomond wallflower	U.S.A. (CA)	E		NA	NA
*	*	*	*	*	*	
Polygonaceae—Buckwheat family:						
*	*	*	*	*	*	
Chorizanthe pungens var. *hartwegiana*.	Ben Lomond spineflower	U.S.A. (CA)	E		NA	NA
*	*	*	*	*	*	
Chorizanthe pungens var. *pungens*	Monterey spineflower	U.S.A. (CA)	E		NA	NA
*	*	*	*	*	*	
Chorizanthe robusta var. *hartwegii*	Scotts Valley spineflower	U.S.A. (CA)	E		NA	NA
*	*	*	*	*	*	
Chorizanthe robusta var. *robusta*	Robust spineflower	U.S.A. (CA)	E		NA	NA
*	*	*	*	*	*	

Dated: September 27, 1991.

Richard N. Smith,

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

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