

Species		Historic range	Family name	Status	When listed	Critical habitat	Special rules
Scientific name	Common name						
<i>Astragalus clarianus</i>	Clara Hunt's milkvetch.	U.S.A. (CA)	Fabaceae	E		NA	NA
<i>Carex albida</i>	White sedge	U.S.A. (CA)	Cyperaceae	E		NA	NA
<i>Clarkia imbricata</i>	Vine Hill clarkia	U.S.A. (CA)	Onagraceae	E		NA	NA
<i>Lilium pardalinum</i> ssp. <i>pitkinense</i>	Pitkin Marsh lily	U.S.A. (CA)	Liliaceae	E		NA	NA
<i>Plagiobothrys strictus</i>	Calistoga allocarya	U.S.A. (CA)	Boraginaceae	E		NA	NA
<i>Poa napensis</i>	Napa bluegrass	U.S.A. (CA)	Poaceae	E		NA	NA
<i>Sidalcea oregana</i> ssp. <i>valida</i>	Kenwood Marsh checkermallow.	U.S.A. (CA)	Malvaceae	E		NA	NA
<i>Trifolium amoenum</i>	Showy Indian clover	U.S.A. (CA)	Fabaceae	E		NA	NA

Dated: July 5, 1995.

Mollie H. Beattie,

Director, Fish and Wildlife Service.

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50 CFR Part 17

[RIN 1018-AD09]

Endangered and Threatened Wildlife and Plants; Proposed Rule to Determine Five Plants and a Lizard from Monterey County, California, as Endangered or Threatened

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 four plants and a reptile: *Astragalus tener* var. *titi* (coastal dunes milk-vetch), *Piperia yadonii* (Yadon's piperia), *Potentilla hickmanii* (Hickmann's potentilla), *Trifolium trichocalyx* (Monterey clover) and the black legless lizard (*Anniella pulchra nigra*); and

threatened status for *Cupressus goveniana* ssp. *goveniana* (Gowen cypress). The six taxa are found primarily along the coast of northern Monterey County, California. The five plant taxa and the lizard are threatened by one or more of the following: alteration, destruction, and fragmentation of habitat resulting from urban and golf course development; recreational activities; highway widening; military activities; competition with non-native species; and alteration of natural fire cycles. All taxa are also threatened with stochastic extinction due to the small numbers of populations or individuals. This proposed rule, if made final, would extend the Act's protection to these taxa.

DATES: Comments from all interested parties must be received by October 9, 1995. Public hearing requests must be received by September 25, 1995.

ADDRESSES: Comments and materials concerning this proposal should be sent to the Field Supervisor, Ventura Field Office, U.S. Fish and Wildlife Service, 2493 Portola Road, Suite B, 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: Carl Benz, Assistant Field Supervisor, Ventura Field Office (see ADDRESSES section) (telephone number 805/644-1766; facsimile 805/644-3958).

SUPPLEMENTARY INFORMATION:

Background

The Monterey Peninsula on the central California coast has been noted for a high degree of species endemism (Axelrod 1982, Howitt 1972, Raven and Axelrod 1978). Species with more northern affinities reach their southern limits on the Peninsula; species with more southern affinities reach their northern limits here as well (Howitt and Howell 1964). The Monterey Peninsula is influenced by a maritime climate that is even more pronounced due to the upwelling of cool water from the Monterey submarine canyon. Rainfall amounts to only 38 to 51 centimeters (cm) (15 to 20 inches) per year, but summer fog-drip is a primary source of

moisture for taxa that would otherwise not be able to persist with such low rainfall. Some taxa, such as the coastal closed-cone pines and cypresses may represent relicts of species that once had a more continuous, widespread distribution in the more mesic climate of the late Pleistocene period, then retreated to small pockets of cooler and wetter conditions along the coast ranges during the hotter and drier xerothermic period between 8,000 and 4,000 years ago (Axelrod 1982).

In 1602, the Spanish government commissioned Sebastian Viscaino to map the coastline; he travelled as far north as the Mendocino coast. In his journal, he made note of the "pine covered headlands" and the "great pine trees, smooth and straight, suitable for the masts and yards of ships" that he saw while anchored in Monterey Bay (F.B. Larkey in Howitt 1972). During the early 1900s, Willis L. Jepson characterized the forests on the Monterey Peninsula as the "most important silva ever", and encouraged Samuel F. B. Morse of the Del Monte Properties Company to explore the possibilities of preserving the unique forest communities (F. B. Larkin in Howitt 1972). Morse believed that developing recreational facilities would allow income to be derived from the property while maintaining the forest intact.

In 1941, maps were compiled by the U.S. Forest Service to show plant associations that were similar in "fire-hazard characteristics and in uses or qualities of economic importance" (U.S. Forest Service 1941). The bulk of the Monterey Peninsula was mapped as Monterey pine forest with a discrete stand of Bishop pine in the center of the peninsula. The coastline was fringed with either "barren" stretches, grassland, or "sagebrush", and a stretch of "cypress species" extending east along the coast from what is known as Cypress Point. By 1930, however, the construction of three golf courses likely resulted in the removal of a number of Monterey pines.

Three native Monterey pine (*Pinus radiata*) stands remain in California: on the Monterey Peninsula; near Ano Nuevo Point in northern Santa Cruz County; and near Cambria in San Luis Obispo County. The Monterey Peninsula stand is not only the most extensive of the three, it is also unique in its association with *Pinus muricata* (Bishop pine), *Cupressus goveniana* ssp. *goveniana* (Gowen cypress), and *Cupressus macrocarpa* (Monterey cypress). While *P. radiata* grows well on a wide variety of soils, it does not do well on the acidic, poorly-drained soils

found on Huckleberry Hill centrally located on Monterey Peninsula. Here, the less aggressive *C. goveniana* ssp. *goveniana* and *P. muricata* are spared competition from *P. radiata*. Some of the chaparral species associated with these forest stands include *Arctostaphylos pumila* (sandmat manzanita), *Arctostaphylos hookeri* ssp. *hookeri* (Hooker's manzanita), *Ceanothus dentatus* (toothleaf lilac), and *Ericameria fasciculata* (Eastwood's ericameria) (Holland 1986, Vogl *et al.* 1988).

Much of what the Forest Service mapped in 1941 as grassland or "barren" (which most likely included coastal dunes) on the peninsular coastline has been subsequently converted to golf courses. Remnant dunes support a coastal dune scrub community dominated by *Artemisia pycnocephala* (beach sagewort), *Baccharis pilularis* (coyote bush), and several bush lupines (*Lupinus arboreus*, *L. chamissonis*). The southernmost occurrences for *Erysimum menziesii* (Menzies wallflower), *Layia carnosa* (beach layia), *Lupinus tidestromii* (Tidestrom's lupine), and *Gilia tenuiflora* ssp. *arenaria* (dune gilia), all federally endangered species, occur on these remnant dunes (Holland 1986, U.S. Fish and Wildlife Service 1992). It is uncertain what species characterized the grasslands mapped by the Forest Service. Aside from harboring small populations of several of the species that are contained within this proposed rule, these patches of herbaceous vegetation support a large number of non-native grasses and succulents, as well as opportunistic native herbaceous species (Ferreira 1992a, Ferreira 1992b). As for the patches mapped by the Forest Service as "sagebrush", these most likely matched what is currently called coastal sage scrub, a community dominated by *Artemisia californica* (California sagebrush). For the most part, these patches occurred within what are now urbanized portions of the cities of Monterey and Pacific Grove and the Pacific Grove Municipal Golf Course.

Astragalus tener var. *titi* (coastal dunes milk-vetch) was first collected by Mrs. Joseph Clemens in 1904 along 17-Mile Drive on the Monterey Peninsula "near an old hut composed of abalone shells and coal-oil cans." Alice Eastwood (1905) later named the plant *Astragalus titi* in honor of Dr. F. H. Titus. Subsequently, John Thomas Howell (1938), while comparing a specimen of *A. tener* that was collected by David Douglas near Salinas, Monterey County, remarked that although "*Astragalus titi* Eastwood has

generally been regarded as the same as *Astragalus tener*, * * * the two plants are not the same and *Astragalus titi* seems worthy of varietal, if not specific recognition." Rupert Barneby published the combination *A. tener* var. *titi* in 1950, noting the difference in flower size, habitat, and geographic range between it and *A. tener* var. *tener* (Barneby 1950).

Astragalus tener var. *titi* is a diminutive annual herb of the pea family (Fabaceae). The slender, slightly pubescent stems reach 1 to 1.5 decimeters (dm) (4 to 6 inches) in height, with leaves that are 7 to 11 pinnately compound and 2 to 7 cm (0.8 to 2.7 inches) long with slightly bilobed tips. The tiny lavender to purple flowers are 5 to 6 millimeters (mm) (0.25 inches) long and are arranged in subcapitate racemes of 2 to 12 flowers. The linear seed pods are straight sickle-shaped and 6 to 14 mm (0.25 to 0.6 inches) long (Bittman 1985).

Two historical locations from Los Angeles County (Hyde Park in Inglewood and Santa Monica) and two from San Diego County (Silver Strand and Soledad) were annotated by Barneby as *Astragalus tener* var. *titi* (Barneby 1950). Numerous unsuccessful searches for the plant have been made in these locations over the past decade (Ferreira 1992a, Julie Vanderweir, botanical consultant, San Diego County, pers. comm., 1992). It is unlikely that suitable habitat remains, since the Los Angeles County locations have been heavily urbanized. The Silver Strand area is owned by the Department of Defense (Miramar Naval Weapons Center), and a portion has been subjected to amphibious vehicle training exercises. Another portion of Silver Strand has been leased by the Navy to the California Department of Parks and Recreation for development of a campground and recreational facilities.

The only known extant population of *Astragalus tener* var. *titi* occurs along 17-Mile Drive on the western edge of the Monterey Peninsula on land owned by the Pebble Beach Company. The milk-vetch occurs on a relatively flat coastal terrace within 30 meters (m) (100 feet (ft)) of the ocean beach and 8 m (25 ft) above sea level. The loamy fine sands that comprise a series of shallow swales on the terrace surface support standing water during wet winter and spring seasons. Individual plants are found on the bottoms or sides of the swales growing in association with other low growing grasses and herbs, including the non-native *Carpobrotus edulis* (hottentot fig) and *Plantago coronopus* (cut-leaf plantain). In 1992, only 120

individuals were counted from the known population, which over the past decade had fluctuated from 15 to 1,000 individuals (Ferreira 1992a).

The population was bisected by construction of 17-Mile Drive, which also likely altered the local hydrology. Half of the remaining habitat occurs between the road and the ocean bluff's edge, and the other half occurs between the interior side of the road and a horse trail that runs parallel to a golfing green. *Astragalus tener* var. *titi* is currently threatened with alteration of habitat from trampling associated with several recreational activities, including hiking, picnicking, ocean viewing, wildlife photography, equestrian use, and golfing. The species also faces threats from stochastic (i.e., random) extinction by virtue of the small size of the remaining population. The plant may also be threatened with competition from the non-native *Carpobrotus edulis* and *Plantago coronopus*, though current management by the Pebble Beach Company includes hottedot fig removal from a portion of the habitat.

Cupressus goveniana ssp. *goveniana* (Gowen cypress) was first discovered by Karl Hartweg "on the pine barrens of Huckleberry Hill (Monterey Peninsula)" in 1846. The plant was described as *Cupressus goveniana* by British horticulturalist George Gordon in 1849 who named it after fellow horticulturalist James R. Gowen (Sargent 1896). Charles Sargent (1896) described the tree as being widely distributed "from the plains of Mendocino County to the mountains of San Diego County" as he included taxa now recognized as distinct in his definition of *C. goveniana*. John G. Lemmon published the name *C. goveniana* var. *pigmaea* in 1895 to refer to the stands found on the "White Plains" of Mendocino County, also referred to as pygmy cypress or Mendocino cypress. As a result of this segregation, the material from the Monterey area would be treated as *C. goveniana* var. *goveniana*. However, Bartel (1993), in keeping with the use of subspecies in the treatment of *Cupressus*, used *C. goveniana* ssp. *goveniana* for the revision of Jepson's Manual. The Service is using Bartel's subspecific treatment for this taxon.

Cupressus goveniana ssp. *goveniana* (Gowen cypress) is a small coniferous tree or shrub in the cypress (Cupressaceae) family. Most of the 10 taxa in the genus *Cupressus* found in California have relatively small ranges (Bartel 1993). Of the three coastal cypresses, native stands of *C. macrocarpa* (Monterey cypress) and *C. goveniana* ssp. *goveniana* are both

restricted to the Monterey Peninsula and Point Lobos in Monterey County.

Cupressus goveniana ssp. *goveniana* generally reaches a height between 5 and 7 m (17 to 23 ft) (Munz 1968), though Griffin noted one individual that was 10 m (33 ft) high at Huckleberry Hill (Griffin and Critchfield 1976). The sparsely branched tree forms a short, broad crown with a spread of 2 to 4 m (7 to 13 ft). The bark is smooth brown to gray, but becomes rough and fibrous on old trees. The scale-like foliage is a light rich green, with leaves 1 to 2 mm long (0.04 to 0.08 inches). The female cones are subglobose (nearly spherical), 10 to 15 mm (0.4 to 0.6 inches) long, and produce 90 to 110 seeds (Wolf and Wagener 1948). The cones, which typically mature in 2 years, remain closed for many years while attached to the cone. Seeds can be released upon mechanical removal from the tree, or more typically upon death of the tree or supporting branch as by heat generated by a wildfire. *Cupressus goveniana* ssp. *goveniana* is distinguished from its close relative *C. goveniana* ssp. *pigmaea* (pygmy or Mendocino cypress) by its much taller stature, the lack of a long, whip-like terminal shoot, and light to yellow-green rather than dark dull green foliage (Bartel 1993).

Only two natural stands of *Cupressus goveniana* ssp. *goveniana* are known to exist, though individuals can be found locally in cultivation. *Cupressus goveniana* ssp. *goveniana* is associated with *Pinus radiata* (Monterey pine), *Pinus muricata* (Bishop pine), and several taxa in the heath family (Ericaceae) (e.g. *Vaccinium*, *Gaultheria*, (*Arctostaphylos*) on poorly drained, acidic, podsol soils (Griffin and Critchfield 1976). The largest stand, referred to here as the Del Monte Forest stand, is near Huckleberry Hill on the western side of the Monterey Peninsula. This stand covers approximately 40 hectares (100 acres), with individuals scattered within a kilometer (1/2 mile) of the main stand.

At least three fires have burned portions of the Del Monte Forest stand in the last 100 years. A large fire burned most of the stand in 1901 (Coleman 1905, and Dunning 1906, in Vogl *et al.* 1988). The northern portion of the stand apparently burned in 1959 (California Department of Fish and Game (CDFG) 1992). The most recent fire burned through the central and eastern portions of the population in 1987. Wolf and Wagener (1948) reported that patches of crowded, poorly developed individuals, referred to as "canes", were cut for posts, making it difficult to determine the original extent of the grove.

The Del Monte Forest stand is on lands owned by the Pebble Beach Company and the Del Monte Forest Foundation (DMFF). The purpose of the DMFF, originally established as the Del Monte Foundation in 1961 by the Pebble Beach Company, is to "acquire, accept, maintain, and manage lands in the Del Monte Forest which are dedicated to open space and greenbelt" (DMFF, *in litt.*, 1992). A large portion of the Del Monte Forest stand is within a 34-hectare (84-acre) area designated as a botanical reserve (Samuel F.B. Morse Botanical Reserve) in the 1960s and donated to DMFF in 1976. In the early 1980s, development of the Poppy Hills Golf Course removed 840 Gowen cypress trees and surrounded other small patches by fairways. The remaining portion of the stand is on lands designated as "open space", and a conservation easement for this area is currently being acquired by DMFF.

A second smaller stand of *Cupressus goveniana* ssp. *goveniana* approximately 16 to 32 hectares (40 to 80 acres) in size occurs 10 km (6 miles) to the south near Gibson Creek on a 60-hectare (150-acre) parcel acquired by the California Department of Parks and Recreation (DPR) (Point Lobos State Reserve) in 1962. The very western edge of the stand is on privately owned ranchlands (Jones and Stokes Associates, Inc. 1989). In this stand, *C. goveniana* ssp. *goveniana* is associated with *Pinus radiata* and chaparral species Griffin and Critchfield 1976, Vogl *et al.* 1988). Due to the physical inaccessibility of the Point Lobos stand and the Reserve's mandate to protect sensitive plant taxa, the Point Lobos stand exhibits fewer signs of human disturbance than the Del Monte Forest stand.

Despite measures taken to protect the *Cupressus goveniana* ssp. *goveniana* stand at the Del Monte Forest, such as establishing the Morse Reserve, the opportunities for maintaining a viable long-term stand may be compromised by the site's close proximity to urbanization. This species is threatened by habitat alteration and destruction due to the influence of continued urban development in Pebble Beach and to the disruption of natural fire cycles as a result of fire suppression activities. In addition, the Del Monte Forest stand has been invaded by aggressive non-native species, including *Cortaderia sellanoa* (pampasgrass) and *Cytisus monspessulanus* (French broom). An increase in such invasive alien plants will undoubtedly alter the composition of the plant community and may adversely affect *C. goveniana* ssp. *goveniana*. The cypress is also

threatened with stochastic (i.e., random) extinction due to the small amount of habitat occupied by the species.

Piperia yadonii (Yadon's piperia) was first collected by Leroy Abrams in 1925 in open pine forest near Pacific Grove. At that time, it was identified as *Piperia unalascensis* (Morgan and Ackerman 1990), a polymorphic, wide-ranging species found from Alaska to Colorado, southern California, and northwestern Mexico. In the most recent treatment of the genus *Piperia*, James D. Ackerman (1977) segregated out several long-spurred taxa from the *P. unalascensis* complex, but attempted no analysis of the short-spurred forms. Subsequently, Morgan and Ackerman (1990) segregated out two new taxa from the *P. unalascensis* complex. One of these, *P. yadonii*, was named after Vernal Yadon, previous Director of the Museum of Natural History in Pacific Grove, Monterey County.

Piperia yadonii is a slender perennial herb in the orchid family (Orchidaceae). During the first few years of growth, the plant is visible only by its one or two lanceolate to oblanceolate basal leaves which die back each winter. In mature plants, the leaves are 10 to 15 cm (4 to 6 inches) long and 2 to 3 cm (0.8 to 1.2 inches) wide. After several years of vegetative growth, the plant sends up a single stem to 80 cm (31 inches) tall with flowers arranged in a dense narrow-cylindrical raceme. The flowers consist of three petal-like sepals and three petals, which together appear as one flower containing six tepals. The upper three tepals are basically green and the lower three white. The lowermost tepal is specialized into a lip that is narrowly triangular and is strongly decurved such that the tip nearly touches the spur of the flower (Morgan and Ackerman 1990). *Piperia yadonii* is sympatric with *P. elegans*, *P. elongata*, *P. michaelii*, and *P. transversa*, but is distinguished from them by the shorter spur length, the particular pattern of green and white floral markings, and the earlier flowering time (R. Morgan, botanical consultant, Soquel, California, pers. comm., 1992).

Piperia yadonii is found within Monterey pine forest and maritime chaparral communities in northern coastal Monterey County from the Monterey Peninsula northeast to the Elkhorn Slough area. This plant occurs primarily on sandstone and sandy soils that are often poorly drained, though dry in summer when the plants are flowering (Morgan and Ackerman 1990). Six populations are clustered on the Monterey Peninsula; two are on Pebble Beach Company lands, two are on

DMFF lands, and two are in city parks in Pacific Grove and Monterey. Four populations are clustered generally between Prunedale and Elkhorn Slough; three of these are on privately owned lands, including one population on land managed by The Nature Conservancy (TNC) (Blohm Ranch), and one is on County property (Manzanita County Park). One small population is located at the northernmost corner of Fort Ord near Marina.

Recent surveys by Morgan indicate that the largest population, consisting of approximately 500 individuals, is scattered along a 2.1 km (1.3 mile) stretch of private road in Pebble Beach (Morgan, *in litt.*, 1992). One population, located in Long Valley between Prunedale and Elkhorn Slough, comprises approximately 150 individuals; the remaining populations range in size from a few individuals to fewer than 100 individuals (Morgan, *in litt.*, 1992).

Piperia yadonii was once more abundant on the Monterey Peninsula. Many historic collections were made from the Pacific Grove area, which has since been urbanized. It is also likely that the plant was previously more abundant in the Prunedale-Elkhorn Slough area; a lack of historical collections from this area is probably a reflection of the lower intensity of botanical collecting compared to the Monterey Peninsula area. Continued alteration and destruction of habitat due to urban and golf course development is currently the greatest threat to *P. yadonii*. Other threats include competition with non-native species, roadside mowing, and a proposed realignment of Highway 101 known as the Prunedale bypass. The small numbers of individuals and populations also make *P. yadonii* vulnerable to stochastic extinction.

Potentilla hickmanii (Hickmann's potentilla) was originally collected by Alice E. Eastwood in 1900 "near the reservoir which supplies Pacific Grove, [Monterey County] California, along the road to Cypress Point". The reference to a reservoir could refer to Forest Lake in Pebble Beach but more likely refers to the Pacific Grove reservoir (Ferreira 1992b). Eastwood (1902) described the species 2 years later, naming it after J. B. Hickman who was her guide on that collecting trip.

Potentilla hickmanii is a small perennial herb in the rose family (Rosaceae) that annually dies back to a woody taproot. The leaves are pinnately compound into generally six paired, palmately cleft leaflets each 2 to 8 mm (0.08 to 0.3 inches) long and 1 to 3 mm (0.04 to 0.1 inches) wide. Several

reclining stems 8 to 15 cm (3 to 6 inches) long support two to four branched cymes (flowering stems) each of which is one- to two-flowered. The flowers consist of 5 ovate to obtuse sepals 6 mm (0.23 inches) long; yellow obcordate petals 6 mm (0.23 inches) long and 5 mm (0.19 inches) wide; and 20 stamens (Abrams 1944, CNPS 1987). *Potentilla hickmanii* is separated from two other potentillas that occur on the Monterey Peninsula (*P. egedii* var. *grandis* and *P. glandulosa*) by a combination of its small stature, leaflet size and shape, and color of the petals.

Only three historical locations for the plant are known (CDFG 1992). A collection was made by Ethel K. Crum in 1932, apparently in the vicinity of Eastwood's original collection. Ferreira (1992b) surveyed the area surrounding the Pacific Grove reservoir in 1992, but found no *Potentilla hickmanii* plants or suitable habitat for the species. A second location was observed by E.C. Suttcliffe at Moss Beach near Half Moon Bay, San Mateo County, in 1933. This occurrence is presumed to be extirpated by urban development in the Half Moon Bay area.

Potentilla hickmanii is currently known from only one location, on the western Monterey Peninsula, in a meadow opening within Monterey pine forest. Loamy fine sandy soils support a meadow community of non-native grasses and several introduced and native herbs. A total of 24 individuals of *P. hickmanii* were located during 1992 surveys, 9 of which are within a small enclosure constructed by the Pebble Beach Company to protect the plants; the other 15 are located within 30 m (100 ft) of the enclosure (Ferreira 1992b). The Pebble Beach Company has maintained management responsibilities for the meadow, though ownership of the land has been transferred to the Del Monte Forest Foundation. *Potentilla hickmanii* is currently threatened with alteration of habitat resulting from recreational activities. The meadow, called Indian Village, is available for use by residents of Pacific Grove and has been developed as an outdoor recreational park. The extremely small numbers of individual plants and populations also make *P. hickmanii* vulnerable to stochastic extinction.

Trifolium trichocalyx (Monterey clover) is a member of the pea family (Fabaceae). The genus *Trifolium* is well-represented in North America, with approximately 50 species recognized in California (Munz 1959). Members of this herbaceous genus are characterized by the palmately three-foliolate leaves (hence the name *Trifolium*) and flowers in spheroid or oblong heads.

Trifolium trichocalyx was first collected by Amos A. Heller "in sandy pine woods about Pacific Grove" in 1903, and described by him the following year (Heller 1904). Laura F. McDermott (1910) considered the taxon a variety of *T. oliganthum* in her treatment of the genus, but this was not recognized in subsequent floras. Axelrod (1982) deferred to Gillett's suggestion that *T. trichocalyx* is a sporadic hybrid between *T. microcephalum* and *T. variegatum* and recommended removing it from the list of taxa considered Monterey endemics. This view was challenged by Vernal Yadon (*in litt.*, 1983) who had grown *T. trichocalyx* and observed that it consistently produces up to seven seeds per pod, while both purported parents were two-seeded taxa. *Trifolium trichocalyx* has continued to be recognized as a distinct taxon by Abrams (1944), Munz (1959), Howitt and Howell (1964) and Isely (1993) and is accepted as such by the Service.

Trifolium trichocalyx is a much-branched prostrate annual herb with leaflets that are obovate-cuneate, 0.4 to 1.2 cm (0.2 to 0.5 inches) long, truncate or shallowly notched at the apex, and spinulose-denticulate along the margins. The numerous flowers are clustered into heads subtended by a lacinate-toothed involucre. The calyces are 7 mm (0.3 inches) long, toothed, and conspicuously pilose; the purple corollas scarcely equal the length of the calyx; the deciduous seed pods enclose up to seven seeds. The plant can be quite inconspicuous, as the prostrate branches may be only 3 to 4 cm (1.2 to 1.6 inches) long. With favorable conditions, however, branches may reach a length of 20 to 30 cm (8 to 12 inches) (Abrams 1944, Yadon, *in litt.*, 1983). Branches from one large plant may spread through the forest litter and give the appearance of many plants. Of the four species of *Trifolium* growing on Huckleberry Hill, all except *T. trichocalyx* contain two seeds per pod. *Trifolium trichocalyx* is currently known from only one area, Huckleberry Hill, covering approximately 16 hectares (40 acres) (Ferreira 1992c) on the Monterey Peninsula. The plant occurs in openings within Monterey pine forest on poorly drained soils consisting of coarse loamy sands. *Trifolium trichocalyx* appears to be a fire-follower, taking advantage of the reduced forest cover for the first few years after a fire, and then becoming more scarce as it is shaded out or outcompeted as the forest community recovers. Heller's collection in 1903 was made 2 years after a fire in the area. Only scattered individuals

were reported by Theodore Niehaus in 1973 and 1979 and by Yadon in 1980 in forest openings or edges (CDFG 1992). One of these sites is presumed to have been extirpated when Poppy Hills Golf Course was developed in 1980; the other two are within the boundaries of the Morse Botanical Reserve.

Surveys for *Trifolium trichocalyx* were conducted in 1988. No plants were found at the locations previously reported by Niehaus and Yadon. However, several hundred to 1,000 plants were scattered throughout the 1987, 80-ha (200-acre) burn near Huckleberry Hill, just to the east of the historical locations (CDFG 1992). No *T. trichocalyx* were found during a 1992 survey of this area, probably because the dense cover of *Pinus radiata* (Monterey pine) seedlings and resprouting chaparral species did not allow the clover to persist. While no living plants of *T. trichocalyx* currently exist in native habitat, it is expected that a seedbank will persist in the soil until they are "released" again by a fire event. Major threats to the continued existence of *Trifolium trichocalyx* include alteration of natural fire cycles, a proposed development that overlaps with the southern portion of the habitat for the clover (as mapped in 1988), and stochastic extinction due to the small amount of remaining habitat and the ephemeral nature of the plant's reappearance after fires.

The black legless lizard was originally described by Fischer in 1885 as *Anniella nigra* (Fischer 1885 in Murphy and Smith 1991). It differs from the silvery legless lizard, *A. pulchra*, in having a darker dorsum, shorter tail, and longer preanal scales. Currently, the black legless lizard is considered a subspecies of *A. pulchra* (Bezy *et al.* 1977), a species with a range extending from the San Francisco Bay area south through western California to northern Baja California, Mexico. Hunt (1983) revised the taxonomy, changing the name of the black legless lizard to *A. nigra nigra* and the silvery legless lizard to *A. nigra argenteum*. However, this nomenclature was not widely accepted. The International Commission on Zoological Nomenclature has been petitioned to conserve the name *Anniella pulchra nigra* (Murphy and Smith 1985, 1991); the Commission has not yet responded with an official position on the subject. The Service accepts the more widely accepted treatment of the black legless lizard as *A. pulchra nigra*.

Anniella pulchra nigra has been collected primarily from coastal areas of the Monterey Peninsula and Monterey Bay between the Salinas and Carmel Rivers (Bury 1985, Miller 1943).

Anniella with dark dorsums, possibly intergrades with the silvery legless lizard, have been collected north of the Salinas River and more than 160 km (100 miles) to the south in the Morro Bay and Pismo Beach areas (Miller 1943); the taxonomy of *Anniella* in these intergrade areas is unclear. Miller (1943) and Bury (1985) considered the black legless lizard to be restricted to the coastal area between the Salinas and Carmel Rivers. Bezy and others (1977) showed the black legless lizard as occurring in the Monterey area and somewhat south, while Stebbins (1985) considered the distribution of this taxon to be the Monterey Peninsula, Monterey Bay, and Morro Bay. All of these authors agree that coastal specimens of *Anniella* from between the Salinas and Carmel Rivers are black legless lizards. As a result, this proposal applies only to *A. p. nigra* from this area and, specifically, the range of this taxon as described by Miller (1943) and Bury (1985).

Based on electrophoretic analyses of *Anniella pulchra nigra* individuals collected from the vicinity of Asilomar on the Monterey Peninsula and Fort Ord on Monterey Bay, Bezy and others (1977) demonstrated that genetic distance between *A. p. nigra* and *A. p. pulchra* was consistent with subspecific classification. Further electrophoretic work has demonstrated genetic differences between dark morphs of *A. p. pulchra* from Morro Bay and the *A. p. nigra* from the Monterey Peninsula (Rainey 1984). This latter work also revealed considerable differences in allele frequencies among sites on the Monterey Peninsula, indicating genetic subdivisions even within that limited area. The emergence of a distinct form of *Anniella* on the Monterey Peninsula probably occurred when the Peninsula was isolated from the mainland as an island. Also, the Peninsula at one time extended farther to the north, providing greater geographic isolation than at present. In post-Pleistocene times there were also large rivers and bays in lowland areas which may have further isolated populations of *Anniella* (Bury 1985).

The black legless lizard (*Anniella pulchra nigra*) is a burrowing, limbless lizard about the diameter of a pencil and reaches a maximum length of about 23 cm (9 inches). It has a black or dark brown dorsum (hatchlings are light colored) and is yellow ventrally (Fisher 1934, Gans *et al.* 1992, Hunt *in prep.*, Stebbins 1985). This species is distinguished from the silvery legless lizard (*A. p. pulchra*) by dark dorsal coloration, lower dorsal caudal scale count, and a relatively short tail (Bezy

et al. 1977, Bury and Corn 1984, Hunt 1983, Miller 1943).

Bury (1985) surveyed most potential habitat for the black legless lizard, as well as sites as far south as Morro Bay and north to Ano Nuevo State Reserve in San Mateo County where intergrades might occur. Black legless lizards were found at 17 sites, all of which lie on or near approximately 45 km (28 miles) of coastline between the Salinas and Carmel Rivers. Key sites included City of Monterey lands south of Salinas River National Wildlife Refuge, Marina State Beach, and Fort Ord, all on Monterey Bay; and several smaller areas on the Monterey Peninsula, including dunes or sandy areas at the U.S. Navy Post-graduate School, Monterey State Beach, Point Pinos, Asilomar State Beach, Spanish Bay, and Carmel State Beach. The largest population of the black legless lizard on federal land is on the Fort Ord property. This military base is undergoing closure; much of the land will be transferred to State and University ownership, and habitat management plans that call for the protection of the lizard will be developed.

Within the very limited range of the black legless lizard, habitat destruction due to urbanization, particularly on the Monterey Peninsula, has severely reduced the distribution of this lizard. About 60 percent of all localities that historically supported black legless lizards no longer contain suitable habitat (Lawrence E. Hunt, University of California, Santa Barbara, pers. comm., 1993). Remaining habitat is degraded by human trampling, sand mining, vehicular use, and introduction of exotic plants, particularly *Carpobrotus edulis* (hottentot fig) and related species and *Ammophila arenaria* (Marram grass). Remaining habitat has also been fragmented by highways and other forms of development (Bury 1985).

Previous Federal Action

Federal government action on the 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 that report, *Astragalus tener* var. *titi*, *Potentilla hickmanii*, and *Trifolium trichocalyx* were recommended for endangered 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 thereby to review the status of the plant taxa named therein. The above three taxa were included in the July 1, 1975 notice. On June 16, 1976, the Service published a proposal in the **Federal Register** (42 FR 24523) to determine approximately 1,700 vascular plant species to be endangered species pursuant to section 4 of the Act. *Astragalus tener* var. *titi*, *Potentilla hickmanii*, and *Trifolium trichocalyx* were included in the June 16, 1976, **Federal Register** proposal.

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

The Service published an updated notice of review for plants on December 15, 1980 (45 FR 82480). This notice included *Astragalus tener* var. *titi*, *Potentilla hickmanii*, and *Trifolium trichocalyx* as category-1 species. Category-1 species are taxa for which data in the Service's possession are sufficient to support proposals for listing. On November 28, 1983, the Service published in the **Federal Register** a supplement to the Notice of Review (48 FR 53640); the plant notice was again revised September 27, 1985 (50 FR 39526). In both of these notices, *Astragalus tener* var. *titi*, *Potentilla hickmanii*, and *Trifolium trichocalyx* were included as category-2 species. Category-2 species are taxa for which data in the Service's possession indicate listing may be appropriate, but for which additional data on biological vulnerability and threats are needed to support a proposed rule. In the 1985 notice, *Cupressus goveniana* ssp. *goveniana* (as *Cupressus goveniana*) was also included for the first time as a category-2 species. On February 21, 1990 (55 FR 6184), the plant notice was again revised, and *Astragalus tener* var. *titi*, *Potentilla hickmanii*, and *Trifolium trichocalyx* were included as category-1 species, primarily because of additional survey information supplied by the California Natural Diversity Data Base, which indicated that the extremely limited populations of these taxa made them particularly vulnerable to impacts from a number of human activities and

naturally caused stochastic events. Those three species also appeared as category 1 species in the current plant notice of review (September 30, 1993; 58 FR 51144). *Cupressus goveniana* ssp. *goveniana* was retained as a category-2 species in the 1990 and 1993 notices of review.

Section 4(b)(3)(B) of the Act requires the Secretary to make findings on certain pending petitions within 12 months of their receipt. Section 2(b)(1) of the 1982 amendments further requires that all petitions pending on October 13, 1982, be treated as having been newly submitted on that date. This was the case for *Astragalus tener* var. *titi*, *Potentilla hickmanii*, and *Trifolium trichocalyx* because the 1975 Smithsonian report was accepted as a petition. On October 13, 1983, the Service found that the petitioned listing of these species was warranted but precluded by other pending listing actions, in accordance with section 4(b)(3)(B)(iii) of the Act; notification of this finding was published on January 20, 1984 (49 FR 2485). Such a finding requires the petition to be recycled, pursuant to section 4(b)(3)(C)(i) of the Act. In October 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991 and 1992, the Service found that the petitioned listing of *Astragalus tener* var. *titi*, *Potentilla hickmanii*, and *Trifolium trichocalyx* was warranted, but that the listing of these species was precluded by other pending proposals of higher priority. Publication of this proposal constitutes the final finding for the petitioned actions on these three species.

The portion of this proposal to list *Piperia yadonii* is largely based on scientific and commercial information on the species, unpublished reports from the California Department of Fish and Game, and information submitted by Randall Morgan, which provides sufficient information to support a proposed rule to list this species as endangered. *Piperia yadonii* first appeared as a candidate in the 1993 notice of review (58 FR 51144) in category 1.

A reevaluation of the existing data on the status of *Cupressus goveniana* ssp. *goveniana* and threats to its continued existence provides sufficient information to support a proposal to list this species as threatened.

In its original Review of Vertebrate Wildlife, published in the **Federal Register** on December 30, 1982 (47 FR 58454), the Service included the black legless lizard as a category-2 candidate for listing. Subsequent revised candidate lists published September 18, 1985 (50 FR 37958); January 6, 1989 (54 FR 554); and November 21, 1991 (56 FR

58804), also included this taxa as a category-2 candidate. New information on the extent of habitat loss and the effects of *Carpobrotus edulis* (hottentot fig) on habitat quality now support a proposed rule to list this species as endangered.

Summary of Factors Affecting the Species

Section 4 of the Endangered Species Act (16 U.S.C. 1533) and regulations (50 CFR Part 424) promulgated to implement the listing provisions of the Act set forth the procedures for adding species to the Federal Lists. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1). These factors and their application to *Astragalus tener* Gray var. *titi* (Eastw.) Barneby (coastal dunes milk-vetch), *Cupressus goveniana* Gord. ssp. *goveniana* (Gowen cypress), *Piperia yadonii* Morgan & Ackerman (Yadon's piperia), *Potentilla hickmanii* Eastw. (Hickman's potentilla), *Trifolium trichocalyx* Heller (Monterey clover), and the black legless lizard (*Anniella pulchra nigra* Fischer) are as follows:

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

Three of the plant taxa—*Astragalus tener* var. *titi*, *Potentilla hickmanii*, and *Trifolium trichocalyx*—occur solely on the Monterey Peninsula. The largest of two *Cupressus goveniana* ssp. *goveniana* stands occurs on the Monterey Peninsula, as does the largest population of *Piperia yadonii*. Habitat for all five plant taxa has been altered, destroyed, and fragmented by the subdivision of residential lots and conversion to golf courses and other recreational facilities.

Of the approximately 4,000 hectares (ha) (10,000 acres) of Monterey Pine forest mapped on the Peninsula by the U.S. Forest Service in the 1930s, less than 10 percent remains. This remaining 10 percent is comprised of scattered islands of forest, the largest of which are a few hundred hectares (several hundred acres) in size. The Pebble Beach Company is currently developing a proposal to convert 277 ha (685 acres) into 17 residential subdivisions, another golf course, and associated recreational facilities (Pebble Beach Company 1992). Several of these subdivisions could remove individuals or clumps of *Cupressus goveniana* ssp. *goveniana* that currently survive as islands of native vegetation within the golf course landscape. A planned subdivision is adjacent to occurrences of *T. trichocalyx* and *Astragalus tener* var. *titi* at the

Indian Village site. Several of the planned subdivisions may adversely affect *Piperia yadonii*.

Additional development in Pebble Beach is currently being planned that may affect habitat for *C. goveniana* ssp. *goveniana*, *P. yadonii*, and *T. trichocalyx* (Pebble Beach Company 1992). A hospice facility, to be built on lands donated by the Pebble Beach Company and recently approved by the City of Monterey, will remove a portion of a population of *P. yadonii* (Earth Metrics Inc. 1992). Maintenance of facilities, including mowing of golf courses and roadsides can indirectly affect *A. tener* var. *titi*, *P. hickmanii*, and *P. yadonii*.

The black legless lizard was never widely distributed. It is still extant within its range between the Salinas and Carmel Rivers; however, much of the coastal sandy plains and dunes that were historic habitat for this lizard have been converted to urban or other uses, particularly on the Monterey Peninsula. Although precise estimates are unavailable, in 1984 Bury found fewer than 35 hectares (86 acres) of suitable habitat for this species on the Monterey Peninsula (Bury 1985). Another 10 to 14 ha (25 to 35 acres) of potentially suitable habitat existed near Fan Shell Beach on the Monterey Peninsula but was not surveyed at the time (R.B. Bury, National Biological Survey, Ft. Collins, Colorado, pers. comm., 1993). This habitat is still intact, but remains to be surveyed (T. Moss, Asilomar State Beach, California, pers. comm., 1993). In reference to the Monterey Peninsula, Bury (1985) states that "prior habitat was much more extensive but has been obliterated by urbanization, roadways, sand mining, and other surface-modifying activities."

On Monterey Bay, south of the Salinas River, Bury (1985) identified about 374 hectares (925 acres) of potential *Anniella pulchra nigra* habitat, but nearly all areas examined were impacted by one or more human uses suspected of negatively impacting legless lizard habitat and populations, including sand mining, human trampling, military activities, and off-road vehicle activities. The largest contiguous tract of black legless lizard habitat exists at Ford Ord, although estimates on the extent of habitat differ. Estimates of suitable habitat at Ford Ord vary from 190 hectares (470 acres) (Bury 1985) to 1,206 hectares (2,980 acres) (U.S. Army Corps of Engineers 1993). The latter figure is based primarily on potentially suitable habitat in which the presence of the black legless lizard has not been confirmed. Additional suitable habitat existed in 1984 on unsurveyed

private lands on Monterey Bay, but this habitat was of limited distribution, in very small parcels, and subject to development (R.B. Bury, pers. comm., 1992).

Exact amount of habitat loss throughout the range since 1984 has not been quantified (R.B. Bury, pers. comm., 1993; T. Moss, pers. comm., 1993). Of 27 localities from which legless lizards have been collected between the Salinas and Carmel Rivers, only 10 or 11 still contain suitable habitat (L. E. Hunt, pers. comm., 1993).

Although heavily impacted by military activities, the largest acreage of remaining suitable habitat for the black legless lizard identified by Bury (1985) occurs at Fort Ord. This U.S. Army base is scheduled to be closed, with the closure process occurring over a period of several years. Activities associated with the closure process, such as disposal (sale of the land) and clean-up, could adversely affect the species. The future disposition of the land is unknown at this time, however, it is likely that some portion of the base will be acquired by the private sector for development. Planned development at Sand City, adjacent to Fort Ord, would result in a loss of black legless lizard habitat, although restoration and long-term conservation of lands set aside for Smith's blue butterfly (*Ephilotas enoptes smithi*), a federally listed endangered species, would enhance the value of remaining habitat within Sand City for this lizard.

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

Overutilization is not currently known to be a factor for the five plant taxa, but unrestricted collecting for scientific or horticultural purposes or excessive visits by individuals interested in seeing rare plants could result from increased publicity following publication of this proposal. *Piperia yadonii*, like many other orchids and showy-flowered monocots, may be particularly vulnerable to collecting by amateur and professional horticulturalists due to the plant's attractive flower and the ease with which it can be transplanted.

Vandalism is a potential threat for these plant species. The sites that these plants inhabit could be easily vandalized, resulting in the destruction of the plants. Many of the sites where these plants exist are small and easily accessible, increasing their susceptibility to destruction.

Although the black legless lizard is of interest to many people because it is an unusual reptile, overutilization does not

appear to be a factor threatening the species (Bury 1985). The State of California prohibits taking or possession of black legless lizards without a special permit (see Factor D). Federal listing could raise the interest in this animal among reptilian trade markets and increase the threat of collection. Interest in the species among reptile collectors could pose a serious threat to populations that contain few individuals.

C. Disease or Predation

Disease and predation are not known to be factors affecting the five plant taxa being proposed as endangered. Several references discuss diseases that affect cypresses (Peterson 1967, Wagener 1948). However, diseases, such as the oak root fungus (*Armillariella mellea*) and the canker-producing strain of *Cornyeum*, primarily seem to attack cypresses planted outside of their native range and in nursery settings (Wagener 1948). No signs of disease or predation have been noted by biologists familiar with the two *Cupressus goveniana* ssp. *goveniana* stands (Jim Griffin, Research Botanist, Hastings Natural History Reservation, Carmel Valley, CA, pers. comm., 1992, Yadon, pers. comm., 1992).

The black legless lizard has no known diseases, and, although it harbors some internal parasites (Hunt and vanLobenSels in press in Bury 1985), populations of this lizard do not seem to be negatively affected by either disease or parasites. Many lizards have broken or scarred tails, indicating possible attempted predation (Bury 1985). Miller (1944) indicated predation by feral house cats may affect some populations.

D. The Inadequacy of Existing Regulatory Mechanisms

Under the Native Plant Protection Act (California Fish and Game Code section 1900 *et seq.*) and the California Endangered Species Act (California Fish and Game Code section 2050 *et seq.*), the California Fish and Game Commission has listed *Astragalus tener* var. *titi*, *Potentilla hickmanii*, and *Trifolium trichocalyx* as endangered. *Piperia yadonii* and *Cupressus goveniana* ssp. *goveniana* are on List 1B of the California Native Plant Society's (CNPS) Inventory (CNPS 1992), indicating that, in accordance with section 1901, of the California Department of Fish and Game Code, it is eligible for State listing. Though both the Native Plant Protection Act and the California Endangered Species Act prohibit the "take" of State-listed plants (section 1908 and section 2080), State

law appears to exempt the taking of such plants via habitat modification or land use change by the landowner. After the California Department of Fish and Game notifies a landowner that a State-listed plant grows on his or her property, State law requires only that the landowner notify the agency "at least 10 days in advance of changing the land use to allow salvage of such plant" (section 1913).

The Pebble Beach Company, the primary landowner on the Monterey Peninsula, has developed policy to protect sensitive species and habitats for current management activities, as well as planning of future development (Fryberger, *in litt.*, 1992). While portions of the *Astragalus tener* var. *titi* population and the *Potentilla hickmanii* population have been fenced off, the remaining portions remain vulnerable to disturbance. No specific protection currently exists for *Piperia yadonii*, *Cupressus goveniana* ssp. *goveniana* and habitat for *T. trichocalyx* are partially protected by the restriction on development within the Morse Reserve. However, development of a golf course in the early 1980s removed a significant number of *C. goveniana* ssp. *goveniana* trees and fragmented the remaining habitat. Development is currently being planned within historical habitat for both of these taxa adjacent to the Reserve.

A management plan for Point Lobos State Park (California Department of Parks and Recreation 1979) states that the major management effort within the preserve will be "management toward the pristine state, that is, the state the ecosystem(s) would have achieved if European man had not interfered," but also to provide limited public access to the *Cupressus goveniana* ssp. *goveniana* area. The stand is currently protected from human disturbance by virtue of its isolation and lack of public access, but the acquisition of key parcels now in private ownership may allow for development of limited public access. Any future development on adjacent private parcels may increase the vulnerability of *C. goveniana* ssp. *goveniana* to human disturbance.

The black legless lizard is listed as a protected reptile under Section 650 of the California Sport Fishing regulations. Except under special permit from the California Department of Fish and Game, collection of black legless lizards is prohibited by the State of California. The habitat of this species, however, is not specifically protected by any State or Federal regulation. Land use on black legless lizard habitat is controlled by local zoning, California State Park regulations on State parks such as

Marina and Monterey State Beaches, and land management practices on Federal lands, including the Salinas River National Wildlife Refuge, Fort Ord, and the Naval Post-graduate School. The black legless lizard is often given special consideration in land use planning and National Environmental Policy Act and California Environmental Quality Act compliance documents. The California Coastal Act regulates approval of developments within the coastal zone and has slowed the loss of coastal habitats such as the dunes and sand habitats used by black legless lizards. This species has also been afforded some protection indirectly through special management for Federal candidate plant species that occur in coastal areas. Where the black legless lizard is sympatric with the endangered Smith's blue butterfly, protection of habitat for the butterfly has also benefitted the legless lizard.

These regulatory mechanisms have slowed the loss, degradation, and fragmentation of black legless lizard habitat, but additional protection is needed to address regional habitat conservation and long-term survival and recovery of this species.

Sand City is in the process of developing a habitat conservation plan for a 13 acre area known as East Dunes. This area supports Smith's blue butterfly (*Euphilotes enoptes smithi*), *Gilia tenuiflora* var. *arenaria* (sand gilia), *Chorizanthe pungens* var. *pungens* (Monterey spineflower), species that are federally listed as endangered, and the black legless lizard. Sand City is including the black legless lizard in this planning process, and it is likely that the plan would adequately provide for the conservation needs of the lizard on this one site.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Two of the five plant taxa occur in small patches of meadow habitat containing a high percentage of non-native taxa. Along 17-Mile Drive, *Astragalus tener* var. *titi* occurs with the non-native *Plantago coronopus* (cut-leaf plantain) and *Carpobrotus edulis*. These non-native species spread rapidly and compete aggressively with native species for space. The Pebble Beach Company has an active *C. edulis* eradication program in and adjacent to the enclosure on the ocean side of 17-Mile Drive. However, *C. edulis* has been planted and is being maintained within a few feet of the unfenced portion of the milk-vetch habitat on the inland side of 17-Mile Drive, and *P. coronopus*, a prolific seeder, is physically crowding

out native species on both sides of 17-Mile Drive (Ferreira 1992a).

The only population of *Potentilla hickmanii* occurs at Indian Village, where Ferreira (1992b) noted four non-native grass taxa associated with the potentilla at this site: *Aira caryophylla*, *Bromus mollis*, *Festuca arundinacea*, and *Lolium multiflorum*. The *Festuca* may have been introduced in a "meadow mix" used on adjacent fairways; its stature and invasiveness appear to offer competition to the potentilla. *Plantago coronopus* is also present at this site.

Cortaderia atacamensis (pampasgrass) and *Cytisus* sp. (genesta) are two other alien plant taxa that compete with native species on the Monterey Peninsula. The Pebble Beach Company has an on-going eradication program for these two taxa in the Huckleberry Hill area adjacent to the *Cupressus goveniana* ssp. *goveniana*. However, numerous fire roads provide open habitat for these invasive taxa and it is unlikely that they will ever be completely eradicated from the area.

Nearly all occupied or potentially occupied black legless lizard localities have substantial populations of exotic plants, particularly *Carpobrotus edulis* (hottentot fig). Legless lizards are primarily associated with moist soil and leaf litter under native vegetation such as *Lupinus albus* (bush lupine), *Haplopappus ericoides* (mock heather), and *Artemisia* sp. (sagewort), and are less abundant in areas dominated by *C. edulis* (Bury 1985, City of Sand City 1992, Miller 1944, Morey 1988, Stebbins 1954). As part of habitat restoration efforts at Asilomar State Beach, over 12 hectares (30 acres) of *C. edulis* were removed by hand. During this effort, black legless lizards were not found in pure stands of *C. edulis*, but were encountered where native shrubs were mixed with the hottentot fig (T. Moss, pers. comm., 1993). Hottentot fig may negatively affect insect populations, the prey base for the black legless lizard (Miller 1944, Stebbins 1954), and thus, adversely affect *Anniella* populations (Bury 1985).

Fire plays an important role in the regeneration of all cypress taxa. Alteration of the natural fire cycle may negatively affect *Cupressus goveniana* ssp. *goveniana* regeneration. Fire is essential since it opens cones that otherwise remain unopened on the trees, and it creates conditions appropriate for seedling establishment (Vogl *et al.* 1988).

Griffin (pers. comm., 1992) and Ferreira (1992c) have noted that establishment of *Pinus radiata* (Monterey pine) seedlings after the 1987

fire has been so vigorous that the pine may be expanding its range at the expense of *Cupressus goveniana* ssp. *goveniana*. Yadon (retired Director, Pacific Grove Museum of Natural History, pers. comm., 1992) believes that the pine's preference for richer soils than those that support *C. goveniana* ssp. *goveniana* would prevent long-term establishment of pines in *C. goveniana* ssp. *goveniana* habitat.

Alteration of habitat due to continuing recreational use of portions of Pebble Beach threaten the precipitously small populations of *Astragalus tener* var. *titi*, and *Potentilla hickmanii*. Trampling by humans and horses can affect these taxa directly, as well as alter soil compaction and erodability such that non-native taxa increase at the expense of native taxa.

At least three, and possibly all, of the five plant taxa are threatened with stochastic extinction by virtue of the limited number of individuals and/or range of the existing populations. Inbreeding may affect small populations, making local extirpations more likely from the inability to produce viable offspring in sufficient numbers. Small populations are also vulnerable to extinction by a single human-caused or natural event. While annual plant taxa, such as *Astragalus tener* var. *titi*, will undergo radical fluctuations in population size, the long-term perpetuation of this taxa depends on maintaining seed production at some critical level, and maintaining appropriate habitat for population expansion. While short-lived perennial taxa like *Piperia yadonii* and *Potentilla hickmanii* may be able to persist through a few climatically unfavorable years, it is still essential to maintain critical seed production levels and to maintain appropriate habitat. *Trifolium trichocalyx* exemplifies a taxon that may persist only as a seedbank for years until released by a fire event. Maintaining habitat and certain fire management prescriptions may be required to prevent the extinction of this species.

The range occupied by *Cupressus goveniana* ssp. *goveniana* is considered extremely small; only *Cupressus abramsiana* (Santa Cruz cypress) and *C. macrocarpa* (Monterey cypress) have stands that occupy as few hectares (acres) as *C. goveniana* ssp. *goveniana* (Griffin and Critchfield 1976). Apparently the 1901 fire on Huckleberry Hill reduced *C. goveniana* ssp. *goveniana* to only a few hectares. Though later observers commented on the extent of recolonization after the fire (Dunning 1906 in Vogl *et al.* 1988, Wolf 1948), the reduction in genetic

variability from such events may leave species unable to adapt to changing environmental conditions (Brussard 1985, Menges 1990, Shaffer 1981).

Existing black legless lizard habitat is severely fragmented due to construction of roads, golf courses, and other urban development that creates barriers to movement and isolates populations. Some extant populations are restricted to extremely small habitat patches, such as at Monterey State Beach and the U.S. Navy Post-Graduate School, where a population persists on a remnant 0.5-hectare (1.2-acre) habitat patch (Bury 1985). Because of small size, these fragmented populations have an increased probability of extinction from stochastic (i.e., random) events (Wilcox and Murphy 1985). Once extirpated, isolation can prevent recolonization of these habitat patches (Frankel and Soule 1981).

The black legless lizard exhibits relatively low fecundity and it is suspected that not all adult females breed each year (Goldberg and Miller 1985, Miller 1944). The related silvery legless lizard has a 4 month gestation period, and produces only 1 or 2 eggs per adult female per year (Goldberg and Miller 1985). Similarly, an average of 1.7 eggs were found in the oviducts of black legless lizards (Miller 1944). This low reproductive potential implies relatively long population recovery times and a heightened sensitivity to habitat impacts such as off-road vehicles, trampling, and other disturbances.

Strong storms and extreme high tides periodically occur at Monterey Bay. These high tides can result in erosion of coastal dunes and shorelines, causing destruction of habitat and mortality of black legless lizards. Without adjacent refugia, such habitats can become devoid of lizards with little chance of recolonization. Because of the fragmented distribution and relatively low reproductive potential of the black legless lizard, these natural events may increase the chance of local extirpations.

As mentioned in Factor A, the alien plant *Carpobrotus edulis* may negatively impact native insect populations that provide prey for *Anniella* species (Miller 1944) and that could conceivably affect *Anniella* populations (Bury 1985).

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by these species in determining to propose this rule. Based on this evaluation, the Service finds that *Astragalus tener* var. *titi*, *Piperia yadonii*, *Potentilla*

hickmanii, *Trifolium trichocalyx*, and the black legless lizard are in imminent danger of extinction throughout all or a significant portion of their ranges. Threats to these four taxa include one or more of the following: habitat destruction, residential development, road maintenance activities, competition from alien plants, alteration of natural fire cycles, military activities, and extinction from stochastic events.

For the reasons discussed above, the Service finds that *Cupressus goveniana* ssp. *govieniana* is likely to become endangered within the foreseeable future throughout all or a significant portion of its range due to habitat alteration and destruction, urban development, disruption of natural fire cycles, competition from alien plants, and stochastic events. The Service has determined that threatened rather than endangered status is appropriate for *C. goveniana* ssp. *govieniana* primarily because one of two populations (the Gibson Creek stand managed by the California Department of Parks and Recreation) has not been significantly affected by human activities. Also, since it is long-lived, *C. goveniana* ssp. *govieniana* may be able to withstand a certain level of habitat disturbance as long as sufficient habitat is maintained. Other alternatives to this action were considered but not preferred because not listing this species at all would not provide adequate protection and not be in keeping with the purposes of the Act, and listing it as endangered would not be appropriate, as the California Department of Parks and Recreation has decreased the danger of extinction at the present time. Therefore, the preferred action is to propose *Astragalus tener* var. *titi*, *Piperia yadonii*, *Potentilla hickmanii*, *Trifolium trichocalyx*, and the black legless lizard as endangered; and *Cupressus goveniana* ssp. *govieniana* as threatened.

Critical Habitat

Section 4(a)(3) of the Act, as amended, requires that, to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time the taxa are determined to be endangered or threatened. Critical habitat results in additional protection to a species' habitat with respect to projects that are federally authorized, funded, or carried out, through the consultation requirements described in section 7 of the Act. The Service finds that designation of critical habitat is not presently prudent for these taxa. 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 imperiled 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.

In the case of *Astragalus tener* var. *titi*, *Potentilla hickmanii*, *Piperia yadonii*, *Cupressus goveniana* ssp. *govieniana*, *Trifolium trichocalyx*, and the black legless lizard both criteria are met. The publication of critical habitat descriptions and maps required in a proposal for critical habitat could increase the degree of threat to these six taxa from possible take or vandalism and, therefore, could contribute to their decline and increase enforcement problems. These six taxa occur within small areas at few locations and are vulnerable to stochastic extinction. The listing of these plants and the lizard as either endangered or threatened publicizes the rarity of the taxa and thus can make them attractive to researchers, curiosity seekers, or collectors of rare plants or animals.

A determination of critical habitat would result in no known benefit to these taxa. The closure of Fort Ord is resulting in the transfer of lands to State Parks and the University of California at Santa Cruz ownership. These lands will be designated as protected habitats for which habitat management plans are under development. Other than the Fort Ord property, most of the known populations of these species are found on state or private lands where Federal involvement in land-use activities does not generally occur. Additional protection resulting from critical habitat designation is achieved through the section 7 consultation process. Since section 7 would not apply to land-use activities occurring on State and private lands and Fort Ord will designate protected habitats for these species, critical habitat designation would not appreciably benefit these species.

All Federal and State agencies involved and local major land owners and planning agencies have been notified of the general location and importance of protecting these species' habitat. Protection of these species' habitat will be addressed through the recovery process and through the section 7 consultation process. Therefore, the Service finds that designation of critical habitat for these species is not prudent at this time.

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. Such actions are initiated by the Service following a listing. The protection required of Federal agencies and the prohibitions against certain activities involving listed plants are discussed, in part, below.

Section 7(a) of the Act, 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 insure 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.

Two of the taxa, *Piperia yadonii* (Yadon's piperia) and the black legless lizard, occur within the boundaries of Fort Ord. Military training activities may affect these taxa and their habitat as could the Federal decision for the ultimate disposition of this property. The Department of Defense would be required to consult with the Service on actions that may affect these two species. Other Federal lands that support habitat for the black legless lizard include the Salinas National Wildlife Refuge and the Naval Postgraduate School in Monterey; however, there are no currently proposed activities on those lands that would affect the lizard. Urban development projects that are occurring on private lands may require permits from Federal agencies, such as section 404 permits from the Army Corps of Engineers.

The Act and its implementing regulations found at 50 CFR 17.61, 17.62, and 17.63 for endangered plants,

and at 50 CFR 17.71 and 17.72 for threatened plants set forth a series of general prohibitions and exceptions that apply to all endangered or threatened plants. With respect to the four plant taxa proposed to be listed as endangered, all trade prohibitions of section 9(a)(2) of the Act, implemented by 50 CFR 17.61 and 17.71, would apply. These prohibitions, in part, make it illegal with respect to any endangered plant for any person subject to the jurisdiction of the United States to import or export; transport in interstate or foreign commerce in the course of a commercial activity; sell or offer for sale these species in interstate or foreign commerce; remove and reduce to possession the species from areas under Federal jurisdiction; maliciously damage or destroy any such species on any area under Federal jurisdiction; or remove, cut, dig up, damage, or destroy any such endangered plant species on any other area in knowing violation of any State law or regulation or in the course of any violation of a State criminal trespass law. *Cupressus goveniana* ssp. *goveniana* (Gowen cypress), proposed to be listed as threatened, would be subject to similar prohibitions (16 U.S.C. 1538(a)(2)(E); 50 CFR 17.61, 17.71).

Seeds from cultivated specimens of threatened plant species are exempt from these prohibitions provided that a statement of "cultivated origin" appears on their containers. Certain exceptions apply to agents of the Service and State conservation agencies. The Act and 50 CFR 17.62, 17.63, and 17.72 also provide for the issuance of permits to carry out otherwise prohibited activities involving endangered or threatened plant species under certain circumstances. Several central coast nurseries have cultivated *Cupressus goveniana* ssp. *goveniana* on occasion, but it apparently is not popular enough to be kept in stock on a regular basis. The Pebble Beach Company is actively cultivating this plant to be used in efforts to restore disturbed habitat (Fryberger, in litt., 1992).

The Act and implementing regulations found at 50 CFR 17.21 set forth a series of general prohibitions and exceptions that apply to all endangered wildlife. With respect to the black legless lizard, these prohibitions, in part, would make it illegal for any person subject to the jurisdiction of the United States to take (including harass, harm, pursue, hunt, shoot, wound, kill,

trap, capture, collect, or attempt any such conduct), import or export, transport in interstate or foreign commerce in the course of commercial activity, or sell or offer for sale in interstate or foreign commerce any listed wildlife species. It also is illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions apply to agents of the Service and State conservation agencies.

Permits may be issued to carry out otherwise prohibited activities involving endangered wildlife species under certain circumstances. Regulations governing permits are at 50 CFR 17.22 and 17.23. Such permits are available for scientific purposes, to enhance the propagation or survival of the species, and for incidental take in connection with otherwise lawful activities.

Requests for copies of the regulations on listed plants and wildlife and inquiries regarding them may be addressed to the U.S. Fish and Wildlife Service, Permits Branch, 911 N.E. 11th Avenue, Portland, OR 97232-4181 (telephone 503/231-6241, facsimile 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 species;

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

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

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

The final decision on this proposal will take into consideration the comments and any additional information received by the Service, and such communications may lead to a

final regulation that differs from this proposal.

The Endangered Species Act provides for a public hearing on this proposal, if requested. Requests must be received by September 25, 1995. Such requests must be made in writing and addressed to the Field Supervisor of the Ventura Field Office (see ADDRESSES section).

National Environmental Policy Act

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

References Cited

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

Authors

The primary authors of this notice are Constance Rutherford and James Rorabaugh, Ventura 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. It is proposed to amend § 17.11(h) by adding the following, in alphabetical order under REPTILES, to the List of Endangered and Threatened Wildlife:

§ 17.11 Endangered and threatened wildlife.

* * * * *
(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	When listed	Status	Critical habitat	Special rules
Common name	Scientific name						
REPTILES							
Lizard, black legless	<i>Anniella pulchra nigra</i>	U.S.A. (CA)	Entire	.....	E	NA	NA

3. 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>Astragalus tener</i> var. <i>titi</i> .	Coastal dunes milk-vetch.	U.S.A. (CA)	Fabaceae	E	.....	NA	NA
<i>Cupressus goveniana</i> ssp. <i>goveniana</i> .	Gowen cypress	U.S.A. (CA)	Cupressaceae	T	.....	NA	NA
<i>Piperia yadonii</i>	Yadon's piperia	U.S.A. (CA)	Orchidaceae	E	.....	NA	NA
<i>Potentilla hickmanii</i> .	Hickman's potentilla	U.S.A. (CA)	Rosaceae	E	.....	NA	NA
<i>Trifolium trichocalyx</i>	Monterey clover	U.S.A. (CA)	Fabaceae	E	.....	NA	NA

Dated: December 30, 1994.

Mollie H. Beattie,

Director, U.S. Fish and Wildlife Service.

Editorial note: This document was received at the Office of the Federal Register on July 27, 1995.

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50 CFR Part 17

RIN 1018-AD34

Endangered and Threatened Wildlife and Plants; Proposed Endangered or Threatened Status for Seven Plants From the Mountains of Southern California

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The Fish and Wildlife Service (Service) proposes to list two plants as endangered under the Endangered Species Act of 1973, as amended (Act): *Poa atropurpurea* (San Bernardino bluegrass) and *Taraxacum californicum* (California dandelion). The Service also proposes to list five plants as threatened: *Arabis johnstonii* (Johnston's rock-cress), *Arenaria ursina* (Bear Valley sandwort), *Castilleja cinerea* (ash-grey Indian paintbrush), *Eriogonum kennedyi* var. *austromontanum* (southern mountain wild buckwheat), and *Trichostema austromontanum* ssp. *compactum* (Hidden Lake bluecurls).

These species are restricted to the Transverse and Peninsular Ranges of southern California, primarily the San

Bernardino and San Jacinto mountains. *Arenaria ursina*, *Castilleja cinerea*, and *Eriogonum kennedyi* var. *austromontanum* occur primarily on pebble plains that are relatively open areas with clay soils. *Poa atropurpurea* and *Taraxacum californicum* are found in mountain meadows. The only known population of *Trichostema austromontanum* ssp. *compactum* is associated with an ephemeral pond. *Arabis johnstonii* is found in forest and chaparral habitats. These seven taxa are threatened by one or more of the following: urbanization, habitat degradation by domestic animals, grazing, competition from introduced weeds, off-road vehicle (ORV) use, trampling, recreational development, alteration of the hydrologic regime, overcollection, and genetic absorption with exotic species. *Poa atropurpurea*,