by the operations specifications, constitutes an approved change to the type design without requiring recertification.

(3) The approved Minimum Equipment List must:

(i) Be prepared in accordance with the limitations specified in paragraph (b) of this section.

(ii) Provide for the operation of the airplane with certain instruments and equipment in an inoperable condition.

(4) Records identifying the inoperable instruments and equipment and the information required by paragraph (a)(3)(ii) of this section must be available to the pilot.

(5) The airplane is operated under all applicable conditions and limitations contained in the Minimum Equipment List and the operations specifications authorizing use of the Minimum Equipment List.

(b) The following instruments and equipment may not be included in the Minimum Equipment List:

(1) Instruments and equipment that are either specifically or otherwise required by the airworthiness requirements under which the airplane is type certificated and which are essential for safe operations under all operating conditions.

(2) Instruments and equipment required by an airworthiness directive to be in operable condition unless the airworthiness directive provides otherwise.

(3) Instruments and equipment required for specific operations by this part.

(c) Notwithstanding paragraphs (b)(1) and (b)(3) of this section, an airplane with inoperable instruments or equipment may be operated under a special flight permit under §§ 21.197 and 21.199 of this chapter.

PART 135—AIR TAXI OPERATORS AND COMMERCIAL OPERATORS

7. The authority citation for part 135 continues to read as follows:

Authority: 49 U.S.C. 1354 (a), 1355(a), 1421–1431 and 1502; 49 U.S.C. 106(g) (Revised Pub. L. 97–449, January 12, 1983).

8. By revising § 135.179 to read as follows:

§ 135.179 Inoperable instruments and equipment.

(a) No person may take off an aircraft with inoperable instruments or equipment installed unless the following conditions are met:

(1) An approved Minimum Equipment List exists for that aircraft.

(2) The Flight Standards District Office having certification responsibility has issued the certificate holder operations specifications authorizing operations in accordance with an approved Minimum Equipment List. The flight crew shall have direct access at all times prior to flight to all of the information contained in the approved Minimum Equipment List through printed or other means approved by the Administrator in the certificate holders operations specifications. An approved Minimum Equipment List, as authorized by the operations specifications, constitutes an approved change to the type design without requiring recertification.

(3) The approved Minimum Equipment List must:

(i) Be prepared in accordance with the limitations specified in paragraph (b) of this section.

(ii) Provide for the operation of the aircraft with certain instruments and equipment in an inoperable condition.

(4) Records identifying the inoperable instruments and equipment and the information required by (a)(3)(ii) of this section must be available to the pilot.

(5) The aircraft is operated under all applicable conditions and limitations contained in the Minimum Equipment List and the operations specifications authorizing use of the Minimum Equipment List.

(b) The following instruments and equipment may not be included in the Minimum Equipment List:

(1) Instruments and equipment that are either specifically or otherwise required by the airworthiness requirements under which the airplane is type certificated and which are essential for safe operations under all operating conditions.

(2) Instruments and equipment required by an airworthiness directive to be in operable condition unless the airworthiness directive provides otherwise.

(3) Instruments and equipment required for specific operations by this part.

(c) Notwithstanding paragraphs (b)(1) and (b)(3) of this section, an aircraft with inoperable instruments or equipment may be operated under a special flight permit under §§ 21.297 and 21.199 of this chapter.

* * * * *

Issued in Washington, DC, on March 18, 1991.

James B. Busey,

Administrator.

[FR Doc. 91–6828 Filed 3–21–91; 8:45 am]

BILLING CODE 4910–13–M

federal register

Friday
March 22, 1991

Part IV

Department of Agriculture

Cooperative State Research Service

Competitive Research Grants Program for Fiscal Year 1991; Amendment to the Solicitation of Applications; Notice

DEPARTMENT OF AGRICULTURE

Cooperative State Research Service

Competitive Research Grants Program (National Research Initiative Competitive Grant Program) for Fiscal Year 1991; Amendment to the Solicitation of Applications

Notice is hereby given that the Notice of the Competitive Research Grants Program (National Research Initiative Competitive Grant Program (NRICGP)) for Fiscal Year 1991; Solicitation of Applications found at 55 FR 49380–49388 (November 27, 1990) is amended by adding the following information for the research area 22.2 Solar Ultraviolet Radiation Monitoring Network for the Biosphere (formerly called Monitoring Systems for Ultraviolet). The Solicitation found at 55 FR 49380–49388, under the heading "Natural Resources and the Environment", provided that research will be supported in the following program area: 22.2 Monitoring Systems for Ultraviolet. Further, the solicitation provided that a description of the research to be supported and the receipt date for proposals would be published at a later date. The purpose of this notice is to provide such information. The original solicitation remains unchanged with regard to the other program areas described therein.

The authority for this program is contained in section 2(b) of the Act of August 4, 1965, as amended (7 U.S.C. 450i(b)). Under this program, subject to the availability of funds, the Secretary may award competitive research grants, for periods not to exceed five years, for the support of research projects to further the programs of the Department of Agriculture. Proposals may be submitted by any State agricultural experiment station, college, university, other research institution or organization, Federal agency, private organization, corporation, or individual. Proposals from scientists at non-United States organizations will not be considered for support.

Section 639 of Public Law No. 101–506, an Act Making Appropriations for Rural Development, Agriculture and Related Agencies programs for the fiscal year ending September 30, 1991, and for other purposes, prohibits Cooperative State Research Service (CSRS) from using the funds available for the NRICGP for fiscal year 1991 to pay indirect costs on research grants awarded competitively that exceed 14 per centum of the total direct costs under each award.

Of the total amount available in fiscal year 1991 for grant awards in "Natural Resources and the Environment", the amount available in the program area of Solar Ultraviolet Radiation Monitoring Network for the Biosphere is approximately $500,000.

Applicable Regulations

Regulations applicable to this program include the following: (a) The regulations governing the Competitive Research Grants Program, 7 CFR part 3200 which set forth procedures to be followed when submitting grant proposals, rules governing the evaluation of proposals and the awarding of grants, and regulations relating to the post-award administration of grant projects; and (b) the USDA Uniform Federal Assistance Regulations, 7 CFR part 3015.

Specific Program Area under Natural Resources and the Environment to be Supported in Fiscal Year 1991

Research on basic fundamental processes involved in biological responses to predicted effects of stratospheric ozone depletion is described in the original solicitation. In addition, there is need for the establishment of a program in the United States the goal of which is to obtain information for the scientific community on the geographical distribution and temporal trends in UV irradiance flux. Such information is needed in order to develop an understanding of the response of living systems to current conditions and to forecast future effects and develop response strategies for mitigating effects resulting from any future increases in UV radiation. The research necessary to attain this goal will require development of reliable and accurate measurement of UV-B radiation and the establishment of intensive study sites. These intensive monitoring sites will serve as a model for a regional monitoring network to be developed in future years. The following specific program area and guidelines are provided as a base from which proposals may be developed:

22.2 Solar Ultraviolet Radiation Monitoring Network for the Biosphere

Proposals developed in this program area should include the following elements:

(1) High-Quality Spectral Irradiance Measurements

Emphasis should be placed on the development of instrument characterization and calibration protocols of existing or newly developed instruments. In order to meet the objectives envisioned for a network of spectroradiometers, the following instrumentation specifications and operating protocols should be met:

General: The instrument should measure the global horizontal terrestrial solar UV-B spectral irradiance over the spectral wavelength region from 290–340 nm. Overall network radiometric uncertainty should be no more than 10% (3 sigma) at 295 nm decreasing to less than 5% (3 sigma) at 340 nm. These and following specifications are applicable over the ambient range of temperature, humidity and pressure found in northern temperate latitudes.

Wavelength Range: 280–400 nm.

Dynamic Range: Spectral irradiance measurements are to be made over a maximum solar signal of 1.0 W/m^2 nm at 400 nm decreasing to less than $10/^{-6}$ W/m^2 nm at 290 nm.

Accuracy and Precision: Instruments must maintain their calibrations over a 30 degree Celsius range for a month time period.

Wavelength:

a. Resolution of wavelength setting (smallest setable difference): ±0.02 nm.

b. Repeatability: ±0.02 nm.

c. Accuracy: ±0.02 nm.

d. Bandpass: <=1.00 nm.

e. Straylight: $<10/^{-8}$ at greater than +5 bandwidths from center wavelength.

Intensity:

a. Resolution: is to be 0.001 of full scale from all decade ranges from 1 to $1x10/^{-5}$ W/m^2 nm and $2x10/^{-5}$ W/m^2 nm for ranges less than or equal to $1x10^{-6}$.

b. Repeatability: must be within 0.2% of the decade range value.

c. Accuracy: instrument shall hold a calibration to an accuracy of ±1% of signal level between 1.0 W/m^2 nm and $10/^{-6}$ W/m^2 nm.

It is recognized that all of these specifications may not be achievable in a single instrument. For any instrument selected, however, a careful evaluation will be required to characterize the instrument in terms of the criteria specified here, particularly in terms of radiometric uncertainty, bandwidth, dynamic range, wavelength range, and wavelength repeatability.

(2) Monitoring Sites

Site locations should be stratified to provide measurements at different latitudes, altitudes, in different climate regimes and under different conditions of tropospheric pollution. Where feasible, sites should be co-located where other radiation and atmospheric measurements are being made. Photosynthetically active radiation, UV–A, cloud cover, turbidity, and total ozone are important ancillary measurements which should be

available at each site. In addition, atmospheric profiles of aerosols, trace gases, and temperatures are of great use in radiative transfer modeling but are unlikely to be initially available at all sites. Complete instrument characterization, calibration, and standardization between sites is considered critical.

(3) Administration and coordination of the network.

While individual site operators will be responsible for quality control and routine calibration (both intensity and wavelength on at least a daily basis), priority will be given to proposals that give consideration to centralized administration, coordination and standardization between sites. In this respect, attention should be given to those components such as inter-instrument characterization and calibration, uniform operational protocols, quality control, and standardized operator training which will become increasingly important as additional sites are added to the network. Included in the instrument standardization repertoire should be such techniques as characterization of the instrument's cosine response, stray light, nonlinearity in electronics and detector response, and radiometric accuracy determination with a secondary standard, etc.

It is anticipated that development of two intensive sites will be supported in fiscal year 1991. In accordance with the provisions of section 2(b)(7) of the Act of August 4, 1965, as amended, grant funds may not be used for renovation of space or the purchase or installation of fixed equipment in such space or for the planning, repair, rehabilitation, acquisition, or construction of a building or a facility. The use of grant funds for mobile or portable units or shelters, not affixed to land, is not prohibited, and such units or shelters may be used to provide a controlled environment for the radiometer and associated data acquisition equipment.

This program area can be addressed by an investigator or investigator(s) at a single institution or at multiple institutions with the proper competence and facilities to accomplish the objectives.

A report, "Justification and Criteria for the Monitoring of Ultraviolet (UV) Radiation as Identified by the Scientific Community", summarizes discussions at a UV-B Measurement Workshop held in Denver, Colorado, from January 23-25, 1991. Copies of the report are available from: Solar Ultraviolet Radiation Monitoring, National Research Initiative Competitive Grants Program, Cooperative State Research Service, U.S. Department of Agriculture, room 323, The Aerospace Center, Washington, DC 20250-2200; telephone (202) 401-5022.

How to Obtain Application Materials

Copies of this solicitation and the Grant Application Kit may be requested from: Proposal Services Branch, Cooperative State Research Service, U.S. Department of Agriculture, room 303, The Aerospace Center, Washington, DC 20250-2200; telephone (202) 401-5049.

How to Prepare a Proposal and What to Submit

Contained in the Grant Application Kit are the instructions for proposal preparation.

An original and 14 copies of each proposal submitted are requested. This number of copies is necessary to permit thorough, objective peer evaluation of all proposals received before funding decisions are made.

Resubmissions of unsuccessful proposals should clearly indicate what changes have been made in the proposal.

Each copy of each proposal must include a form CSRS-661, "Grant Application," which is included in the Grant Application Kit. Proposers should note that one copy of this form, preferably the original, must contain pen-and-ink signatures of the principal investigator(s) and the authorized organizational representative. Each project description is expected to be complete in itself. It should be noted that reviewers are not required to read beyond 15 pages of the project description to evaluate the proposals. Proposals beyond this limit may not be reviewed or may be returned. Appendices should be limited to materials that are pertinent to the proposal and should not be used as a way to circumvent the page limit. The *vitae* of key project personnel should be limited to three (3) pages, including a list of publications for the last five (5) years.

All copies of a proposal must be mailed in one package. Also, please see that each copy of each proposal is stapled securely in the upper lefthand corner, do not bind. Information should be typed on one side of the page only. Every effort should be made to ensure that the proposal contains all pertinent information when initially submitted. Prior to mailing, compare your proposal with the "Application Requirements" checklist contained in the Grant Application Kit.

Where and When to Submit Grant Applications

Each research grant application must be submitted to: National Research Initiative Competitive Grants Program, c/o Proposal Services Branch, Cooperative State Research Service, U.S. Department of Agriculture, room 303, The Aerospace Center, Washington, DC 20250-2200. Proposals which will be hand-carried or delivered by overnight express service should be addressed to: National Research Initiative Competitive Grants Program, c/o Proposal Service Branch, Cooperative State Research Service, room 303, The Aerospace Center, 901 D Street SW., Washington, DC 20024. To be considered for funding during fiscal year 1991, proposals submitted in response to this announcement must be postmarked by May 13, 1991. Additional information on this program area may be obtained by calling (202) 401-4871.

Special Instructions

The NRICGP should be indicated in Block 7 and the applicable program area (Solar Ultraviolet Radiation Monitoring) and program code (22.2) should be indicated in block 8 of form CSRS-661 provided in the Grant Application Kit.

Supplementary Information

The Competitive Research Grants Program is listed in the Catalog of Federal Domestic Assistance under No. 10.206. For reasons set forth in the Final rule-related notice to 7 CFR part 3015, subpart V (48 FR 29115, June 24, 1983), this program is excluded from the scope of Executive Order 12372 which requires intergovernmental consultation with State and local officials. In accordance with the provisions of the Paperwork Reduction Act of 1980 (44 U.S.C. 3504(h)), the collection of information requirements contained in this notice have been approved under OMB Document Nos. 0524-0022.

The award of any grant under the NRICGP during FY 1991 is subject to the availability of funds. One copy of each proposal that is not selected for funding will be retained for a period of one year. The remaining copies will be destroyed.

Done at Washington, DC, this 18th day of March, 1991.

John Patrick Jordan,

Administrator, Cooperative State Research Service.

[FR Doc. 91-6869 Filed 3-21-91; 8:45 am]

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federal register

Friday
March 22, 1991

Part V

Department of the Interior

Fish and Wildlife Service

50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Proposed Endangered Status for Six Plants and Myrtle's Silverspot Butterfly From Coastal Dunes in Northern and Central California; Proposed Rule

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018-AB56

Endangered and Threatened Wildlife and Plants; Proposed Endangered Status for Six Plants and Myrtle's Silverspot Butterfly From Coastal Dunes in Northern and Central 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 (Act), as amended, for six plants and one butterfly: *Chorizanthe howellii* (Howell's spineflower), *Chorizanthe valida* (Sonoma spineflower), *Erysimum menziesii* (Menzies' wallflower), *Gilia tenuiflora* ssp. *arenaria* (Monterey gilia), *Layia carnosa* (beach layia), *Lupinus tidestromii* (clover lupine), and Myrtle's silverspot butterfly (*Speyeria zerene myrtleae*). These species are restricted to northern and central California within the foredunes and dune scrub communities and adjacent sandy habitats occupied by coastal scrub or coastal prairie. The six plant taxa, the butterfly and its larval food plant are threatened by one or more of the following: commercial and residential development, competition from alien plants, off-road vehicle use, equestrian use, trampling by hikers, livestock, and sand mining, disposal of dredged material, and perhaps stochastic (i.e., random) extinction by virtue of the small isolated nature of the remaining populations. This proposal, if made final, would implement the Federal protection and recovery provisions afforded by the Act for the plants and butterfly. The Service seeks data and comments from the public on this proposal.

DATES: Comments from all interested parties must be received by May 21, 1991. Public hearing requests must be received by May 6, 1991.

ADDRESSES: Comments and materials concerning this proposal should be sent to the Field Supervisor, U.S. Fish and Wildlife Service, Sacramento Field Office, 2800 Cottage Way, Room E-1823, Sacramento, California 95825. Comments and materials received will be available for public inspection, by appointment, during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: Mr. Jim A. Bartel (plants) or Mr. Christopher D. Nagano (butterfly), at the above address (916/978-4866 or FTS 460-4866).

SUPPLEMENTARY INFORMATION:

Background

Chorizanthe howellii, Chorizanthe valida, Erysimum menziesii, Gilia tenuiflora ssp. *arenaria, Layia carnosa, Lupinus tidestromii,* and Myrtle's silversport butterfly (*Speyeria zerene myrtleae*) are endemic to the coastal dunes of northern and central California. Within these dune systems, the six plants and butterfly are restricted to the coastal foredunes and coastal dune scrub communities and adjacent sandy habitats occupied by coastal scrub or coastal prairie. The foredunes (also referred to as littoral dunes (Barbour and Johnson 1997) or coastal strand (Cooper 1919, Munz and Keck 1950)) are situated immediately above the lower, non-vegetated portion of the beach or littoral strip. In the dune systems north of Monterey Bay, sand-stabilizing rhizomatous grasses, *Ammophila arenaria* and *Elymus mollis,* generally dominate the vegetation of the foredunes (Barbour and Johnson 1977). *Ammophila arenaria,* European beachgrass or marram grass, is an alien species that has largely replaced the native *Elymus*-dominated foredune community. According to Sauer (1988), European beachgrass "has become a powerful geomorphic agent [along the California coast] by building fairly continuous wall-like foredunes, which were not previously characteristic of this region." Although the *Elymus*-dominated foredune community exists about Monterey Bay, these foredunes typically consist of low hillocks and mounds that are sparsely populated with generally succulent, tap-rooted, perennial herbs (e.g., *Abronia latifolia, Ambrosia chamissonis, Calystegia solandella, Camissonia* ssp., *Carpobrotus aequilaterus, C. edulis, Fragaria chiloensis*) (Barbour and Johnson 1977). The wind, water table and vegetation have created the plant associations and topographic features that are found behind the foredunes and its associated plant community. The numerous names (e.g., deflation area, stabilized ridge, vernal pool hollow, open dune pioneer community, dune-mat community, *Poa-Lathyrus* phase, scrub zone, dune chaparral, climax dune forest) used by plant ecologists (Cooper 1919, Johnson 1963, Parker 1974, McBride and Stone 1976, Barbour and Johnson 1977, Woodhouse 1982, Renner *et al.* 1986, Pickart 1987) to describe these "backdune" habitats have complicated the literature. Aside from supplanting the native *Elymus*-dominated community in the foredunes, the stabilization of the dunes by *A. arenaria* has permitted the colonization of formerly active backdune areas with a mixture of native and alien plants (Sauer 1988). The generally stabilized backdune areas occupied by the species proposed herein can be characterized as a soft, woody, dense plant community of short shrubs and subshrubs (<2 m tall), and herbaceous plants. Often referred to as coastal dune scrub (cf. Holland 1986), several plants (e.g., *Artemisia pycnocephala, Baccharis piluaris, Ericameria ericoides, Lupinus arboreus, L. chamissonis, Scrophularia californica*) are commonly associated with this community.

Aside from the beachgrass, many other alien plants have invaded these dune plant communities. Introduced taxa that are now established include sea-rocket (*Cakile* spp.), ice plant or sea-fig (*Carpobrotus* spp.), and several annual grasses and forbs generally restricted to wetland habitats within the dunes (Barbour and Johnson 1977, Sauer 1988). In addition to the beachgrass, which has been used in dune stabilization projects along the Pacific Coast since 1869 (Cooper 1967), bush lupine (*Lupinus arboreus*), a shrub native to the dunes of central and southern California, has been sown into the dune systems north of San Francisco Bay since 1900 (Miller 1987). In some cases, these aliens have outcompeted and largely supplanted the native dune vegetation, including the six plants proposed herein and the foodplants of Myrtle's silverspot butterfly.

In addition to the impact of exotic vegetation, many of the dune systems harboring populations of the six plants and butterfly are threatened by proposed commercial and residential development. The historical use of some dune systems by the military has resulted in "heavy damage" (Cooper 1967). Off-road vehicle use has damaged the fragile plant communities in these dune systems and remains a significant threat to the six plants and butterfly on both public and private lands. The use of off-road vehicles damages these dune habitats by destabilizing soils, potentially facilitating the invasion of alien plants. Native species including the taxa proposed herein are crushed and killed. The use of off-road vehicles has denuded many dune areas of vegetation. Trampling of the dune flora by equestrians, hikers (Brown 1987), and livestock (Clark and Fellers 1986) threatens the plants. Other factors

adversely affecting coastal dunes and the seven species proposed herein include sand mining, disposal of dredged material from adjacent bays and waterways, and perhaps stochastic extinction by virtue of the small isolated nature of the remaining populations.

A Discussion of the Seven Species Proposed Herein for Listing Follows

Chorizanthe howellii (Howell's spineflower) was first collected by Mathews in 1914 from the sand dunes north of Fort Bragg in Mendocino County. Based on a collection made by John Thomas Howell in 1929, Goodman described and named the species in Howell's honor in 1934. *Chorizanthe howellii*, a member of the buckwheat family (Polygonaceae), is a shaggy-haired, short (3–10 cm), annual herb with spatula-shaped, 1–3 centimeters long, basal leaves, and spreading to decumbent stems that branch from the base. Flowers, which appear May through July and are white to rose in color, generally range from 3.5–4.5 millimeters in length (Reveal and Hardham 1989). Characteristics of the species' flowers, habit, tepals (petal-like sepals), involucres (whorl of bracts subtending the flowers), and involucral teeth and awns separate *C. howellii* from other annual species in the genus. Restricted to coastal foredunes and adjacent sandy habitats occupied by coastal prairie, the species is discontinuously distributed within the southern portion of the dunes south of Tenmile River. This dune system, referred to as the "Tenmile River" dunes by Cooper (1967), stretches continuously for about 5 miles from the mouth of Tenmile River to Laguna Point, with isolated dunes occurring as far south as Pudding Creek on the north edge of the community of Fort Bragg.

Chorizanthe valida (Sonoma spineflower) was originally collected by Ilya Vosnesensky in 1841 (Raveal and Hardham 1989). Given the ambiguity of his collection label, the locality is not clear. Watson, who described the species from Vosnesensky's material in 1877, referred to "Russian Colony" as the type locality. Though Reveal and Hardham (1989) listed the type locality as "near Fort Ross" in Sonoma County, Davis and Sherman (1990) speculated that Vosnesensky may have collected the type specimen from the Point Reyes Peninsula in Marin County. *Chorizanthe valida*, a member of the buckwheat family (Polygonaceae), is an erect to spreading, 1–3 decimeters tall, shaggy-haired, annual herb with 1–5 centimeters long, basal leaves that are typically wider near the tip. Flowers, which appear June through August and are white to lavender to rose in color, are 5–6 millimeters long (Reveal and Hardham 1989) and occur in dense, ball-shaped, pinkish clusters with green bracts below. As with *C. howellii*, characteristics of the species' flowers, habit, tepals, involucres, and involucral teeth and awns separate *C. valida* from other taxa. Today the species is restricted to sandy places within coastal prairie near the south end of Abbotts Lagoon, which is immediately adjacent to the "Point Reyes" dune system. According to Cooper (1967), this dune system ranges for about 12 miles from south of Tomales Point to Point Reyes within Point Reyes National Seashore in Marin County. Thought to be extinct, the plant was rediscovered by a group of amateur botanists in 1980 at Abbotts Lagoon (Davis and Sherman 1990). Although the Park Service has enclosed this population within a 360-acre pasture to protect the plants from grazing cattle, only about 2,500 plants grew in the enclosure in 1988. The species was more widespread and historically grew south of the Abbotts Lagoon population near the old Point Reyes post office (Reveal and Hardham 1989). According to the California Natural Diversity Data Base (CNDDB), however, a putative collection of *C. valida* from Rodeo Lagoon in Marin County actually came from Abbotts Lagoon. Additional historical collections of this spineflower were made near Petaluma and Sebastopol in the interior portion of Sonoma County (Reveal and Hardham 1989). Given the extensive urbanization in this area, these localities are considered extinct (Reveal and Hardham 1989).

Erysimum menziesii (Menzies' wallflower) was first collected from the Monterey area by Archibald Menzies during the Vancouver expedition in 1792–94. Hooker, citing Menzies' collection as the type, described the plant as **Hesperis menziesii** in 1830. Though Bentham and Hooker (1862) subsequently placed the species within the genus *Chieranthus*, von Wettstein (1889) appropriately transfered the plant to the genus *Erysimum*. Subsequent taxonomic treatments of North American wallflowers by Rossbach (1940, 1958) and Price (1987) have maintained *E. menziesii* as a distinct species. Although Price recognizes three subspecies of the plant, he has yet to formally describe these new subspecies. *Erysimum menziesii*, a member of the mustard family (Brassicaceae), is a low (<3 dm tall), succulent, rosette-forming, biennial to short-lived perennial herb. Throughout most of its range, the species produces dense clusters of bright yellow flowers in the winter and early spring (i.e., January to April). However, the populations near Marina in Monterey County flower in early summer (i.e., May-June). The characteristic fleshy, spoon-shaped, rosette leaves of *E. menziesii* and *E. concinnum* are used to distinguish these coastal species from other native wallflowers. The divergent fruits or siliques, and smaller (<10 mm), consistently yellow petals of *E. menziesii* separate the species from *E. concinnum*. *Erysimum menziesii* is discontinuously distributed within the coastal foredune community of four dune systems. The northernmost dune system, referred to as "Humboldt Bay" by Cooper (1967), stretches from the mouth of the Little River to Centerville Beach south of the Eel River in Humboldt County. Within these dunes, the species is restricted to a 12-mile stretch between the mouths of the Mad River and Humboldt Bay (i.e., Samoa Peninsula). *Erysimum menziesii* also occurs within the Tenmile River dune system in Mendocino County and the "Monterey Bay" dune system, which according to Cooper (1967), ranges from La Selva (north of the mouth of the Pajaro River) to the City of Monterey in Monterey County. Within the Monterey Bay dune system, the species does not occur north of the mouth of the Salinas River. Several small discontinuous populations occur within this 13-mile reach. The southernmost populations of *E. menziesii* exist in the "Monterey Peninsula" dune system, as defined by Cooper (1967). The Monterey Peninsula dunes, which are localized and limited in size, occur in two general areas: Point Pinos to Point Joe and north of Point Cypress. The species occurs in both areas. Putative collections of *E. menziesii* from north of Mendocino in Mendocino County and from north of Lake Talawa in Del Norte County are *E. concinnum* (Price 1987).

Gilia tenuiflora ssp. *arenaria* (Monterey gilia) was first collected by David Douglas in the early 1800's. Bentham described the plant as a species in 1833, based on Douglas' collection. In 1943, Jepson reduced the gilia to a variety of *G. tenuiflora*, a widespread species restricted to sandy habitats on Santa Rosa Island and within the central coastal portion of California. Subsequently, Grant and Grant (1956) elevated the plant to subspecific rank. *Gilia tenuiflora* ssp. *arenaria*, a member of the phlox family (Polemoniaceae), is an erect, short (<1.7 dm tall), rosette-forming, annual herb. The narrow (2–4 mm) petals and narrow purple throat of the funnel-shaped flower, open inflorescence, short fruits

or capsules (3.5–5 mm), and slightly exserted stamens separate ssp. *arenaria* from the other three subspecies of *G. tenuiflora*. The plant is restricted to isolated occurrences within wind-sheltered, sparsely vegetated portions of the Monterey Bay and Monterey Peninsula dune systems in Monterey County. The subspecies typically grows within coastal dune scrub or Flandrian dune habitat (Pavlik *et al.* 1987). The Monterey Peninsula populations range from Point Pinos to Point Joe.

Layai carnosa (beach layia) was originally collected by Thomas Nuttall reportedly from "St. Diego, Upper California" in 1835. Citing his collection as the type, Nuttall described the species as *Madaroglossa carnosa* in 1841. Two years later, Torrey and Gray (1843) transferred the plant and the other species of *Madaroglossa* into the genus *Layia*. Although Greene (1892) placed *L. carnosa* into the monotypic genus *Blepharipappus*, authors of subsequent floras (Munz 1959, Ferris 1960) concurred with Torrey and Gray. *Layia carnosa*, a member of the sunflower family (Asteraceae), is a low (<15 cm), glandular, succulent, winter annual. Highly branched individuals often spread more than 4 decimeters in diameter. The sticky fleshy leaves, short (2–4 mm) white-colored ray flowers, and bristles about the summit of the achene (one-seeded fruit) differentiate *L. carnosa* from other species in California. Historically, *L. carnosa* was restricted to widely scattered, isolated occurrences within the coastal foredunes of seven dune systems. The northernmost occurrences of *L. carnosa* are from the Humboldt Bay dune system in Humboldt County. These populations ranged from near the mouth of the Little River and along the Samoa Peninsula. Exotic vegetation and highway construction reportedly eliminated *L. carnosa* and the rest of the native plant community from the Little River area. *Layia carnosa* occurs in two isolated dune systems not discussed by Cooper (1967), near the mouth of McNutt Gulch and south of the mouth of the Mattole River in Humboldt County. The species has been collected from near Kehoe Beach and Abbotts Lagoon in the Point Reyes dune system. Though collected from the San Francisco Peninsula in San Francisco County in 1904, the development of Golden Gate Park and growth of San Francisco eliminated this population and dune system (Cooper 1967). Within the Monterey Peninsula dune system, two of the four known occurrences, have been eliminated. Although suitable habitat remains, the southermost location of *L. carnosa* from near Surf in Santa Barbara County has not been seen since 1929. This site occurs within the "Santa Ynez River" dune system, as defined by Cooper (1967).

Lupinus tidestromii (clover lupine) was first collected from Pacific Grove on the Monterey Peninsula by Ivar Tidestrom in 1893. Greene described the species based on the Tidestrom collection in 1895. After Eastwood (1938) described a similar lupine (*L. layneae*) from Point Reyes, Munz (1958) recognized these northern California plants as a variety of *L. tidestromii*. The presence of blackish spots on the seeds, longer inflorescence stems (4–8 cm), and shorter hairs on the leaves and stems separate *L. tidestromii* var. *tidestromii* (Monterey Peninsula) from *L. tidestromii* var. *layneae* (Point Reyes Peninsula). *Lupinus tidestromii*, a member of the pea family (Fabaceae), is a low (1–3 dm), silky, creeping, sand-binding perennial herb. The species produces whorls of blue to lavender-colored flowers from May to June. The generally prostrate habit, bright yellow roots, small leaflets (1.3–2 cm long), and densely pubescent foliage distinguish *L. tidestromii* from other lupines. Restricted to coastal foredunes, the species is discontinuously distributed in three dune systems. The northern most locality is an isolated population along the south bank of the Russian River near its mouth in Sonoma County. Further south within the Point Reyes dune system, Clark and Fellers (1986) noted the occurrence of three isolated stands of *L. tidestromii* from Abbotts Lagoon to Point Reyes Test Station. However, based on field work in 1988 (Viginia Norris, local amateur botanist, *in litt.*, May and June 1988), the species likely is more abundant within the Point Reyes dune system. The Monterey Peninsula populations range from Point Pinos to Pebble Beach. A putative collection of *L. tidestromii* from Bodega Head in Sonoma County in 1925 may be misidentified because of the limited dune habitat from this general area and the vegetative condition of the specimen.

Myrtle's silverspot butterfly (*Speyeria zerene myrtleae*) is a member of the brush-foots family (Nymphalidae). Using specimens collected by W.F. Breeze from San Mateo, San Mateo County, California, in July and August of 1919, dos Passos and Grey described the butterfly in 1945. This subspecies is a medium sized butterfly with a wingspan of approximately 55 millimeters. The upper surfaces of the wings are golden brown with numerous black spots and lines. The undersides are brown, orange-brown, and tan with black lines and distinctive silver and black spots. The basal areas of the wings and body are densely pubescent (hairy). The females lay their eggs in the debris and dried stems of the larval foodplant, *Viola* sp. (McCorkle and Hammond 1988). Upon hatching, the caterpillars wander a short distance and spin a silk pad upon which they pass the winter. The larvae are dark-colored with many sharp branching spines on their backs. The caterpillars immediately seek out the foodplant upon termination of their diapause in the spring. This portion of the life history of the butterfly may last about 7–10 weeks. The larvae then form their pupa within a chamber of leaves that they have drawn together with silk. Based on studies of a related subspecies, the adults may emerge in about 2 weeks and could live for approximately 3 weeks (McCorkle 1980). Depending upon environmental conditions, the flight period of this single brooded butterfly ranges from late June to early September (Sterling Mattoon, entomologist from Chico, California, *in litt.*, August 4, 1989).

The historical range of Myrtle's silverspot butterfly extends from San Mateo County north to the mouth of the Russian River in Sonoma County (Mattoon, *in litt.*, August 4, 1989). No butterflies have been observed recently at the known population sites near Pacifica and San Mateo in San Mateo County. Three populations are known to inhabit coastal prairie and associated habitats in western Marin and southwestern Sonoma Counties. Two populations are located within the Sonoma State Beaches in Sonoma County; near Portuguese Beach and on the peninsula west of Bodega Harbor. A third population occurs in Point Reyes National Seashore in Marin County (Mattoon, *in litt.*, August 4, 1989). A single female specimen was recorded from Valley Ford in Sonoma County, which is approximately 8 miles inland from the community of Bodega Bay. This lone butterfly may have been from a local colony or a dispersing individual.

Federal government actions on the six plants began as a result of section 12 of the Endangered Species Act of 1973, which directed the Secretary of the Smithsonian Institution to prepare a report on those plants considered to be endangered, threatened, or extinct. This report, designated as House Document No. 94–51, was presented to Congress on January 9, 1975. In the report, *Chorizanthe valida* was thought to be possibly extinct, both varieties of *Lupinus tidestromii* (vars. *tidestromii* and *layneae*) were listed as endangered species, and *Chorizanthe howellii* and *Erysimum menziesii* were listed as

threatened species. 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 within. On June 16, 1976, the Service published a proposed rule in the **Federal Register** (41 FR 24523) to determine approximately 1,700 vascular plant species to be endangered species pursuant to section 4 of the Act. The list of 1,700 plant taxa was assembled on the basis of comments and data received by the Smithsonian Institution and the Service in response to House Document No. 94–51 and the July 1, 1975, **Federal Register** Publication. *Chorizanthe valida*, and both varieties of *Lupinus tidestromii* were included in the proposed rule, though the Service requested additional information on *C. valida*. General comments received in relation to the 1976 proposal were summarized in an April 26, 1978, **Federal Register** publication (43 FR 17909), which also determined 13 plant species to be endangered or threatened.

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 proposals over 2 years old. In the December 10, 1979, **Federal Register** (44 FR 70796), the Service published a notice of withdrawal of that portion of the June 16, 1976, proposal, along with four other proposals that had expired. On December 15, 1980, the Service published a revised notice of review of native plants in the **Federal Register** (45 FR 82480); *Chorizanthe valida*, *Erysimum menziesii*, *Gilia tenuiflora* ssp. *arenaria*, *Lupinus tidestromii* var. *layneae*, and *L. tidestromii* var. *tidestromii* were included as category-1 species (species for which the Service has sufficient data in its possession to support a listing proposal as endangered or threatened), while *Chorizanthe howellii* was included as a category-2 species (species for which data in the Service's possession indicated listing is possibly appropriate, but for which additional biological information is needed to support a proposed rule). On November 28, 1983, the Service published in the **Federal Register** (48 FR 53640) a supplement to the 1980 notice of review. This supplement treated *Chorizanthe valida* and *Lupinus tidestromii* var. *layneae* as category-2 species. *Erysimum menziesii*, *Gilia tenuiflora* ssp. *arenaria*, and *Lupinus tidestromii* var. *tidestromii* were included in category 1, and *Chorizanthe howellii*, *C. valida*, and *Lupinus tidestromii* var. *layneae* were included in category 2 in the September 27, 1985, revised notice of review for plants (50 FR 39526). Subsequently, precise survey information by Teresa Sholars (Department of Botany, University of California, Berkeley) delineated the threats facing *Chorizanthe howellii* and field work by Clark and Fellers (1986) and other National Park Service researchers provided the necessary information regarding the status of *Chorizanthe valida* and the Point Reyes populations of *L. tidestromii* (i.e., *L. tidestromii* var. *layneae*). In addition, the California Native Plant Society and The Nature Conservancy recently compiled distribution and threat data delineating the Status of *Layia carnosa*, a species never considered before for candidate status. The portion of this proposal to list *Chorizanthe howellii*, *C. valida*, *Erysimum menziesii*, *Gilia tenuiflora* ssp. *arenaria*, *Layia carnosa*, and *Lupinus tidestromii* as endangered is largely based on population data from numerous botanists that have been collated by the CNDDB, and various reports and studies discussed in this rule (see "References Cited" below).

Section 4(b)(3)(B) of the Endangered Species Act, as amended, 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 *Chorizanthe howellii*, *C. valida*, *Erysimum menziesii*, and the two varieties of *Lupinus tidestromii because the 1975 Smithsonian report was accepted as a petition. In October 1983, 1984, 1985, 1986, 1987, 1988, and 1989, the Service found that the petitioned listing of Chorizanthe howellii*, *C. valida*, *Erysimum menziesii*, *Lupinus tidestromii* var. *layneae*, and L. *tidestromii* var. *tidestromii* was warranted, but that the listing of these species was precluded due to other higher priority listing actions. Publication of the present proposal constitutes the final finding for the petitioned action.

On March 20, 1975, Myrtle's silverspot butterfly was listed as one of 42 insects whose status was being reviewed for listing as either endangered or threatened by the Service in the **Federal Register** (40 FR 12691). This insect was listed as a category-2 species in the January 6, 1989, **Federal Register** Animal Notice of Review (54 FR 573). Dr. Dennis Murphy of the Center for Conservation Biology, Stanford University, Stanford, California, petitioned the Service to list Myrtle's silverspot butterfly as an endangered species in a letter dated June 28, 1989, that was received on June 29, 1989. The Service made a 90-day finding on October 2, 1990 that the petition contained substantial information indicating that the action requested may be warranted, and published the finding in the **Federal Register** on November 1, 1990 (55 FR 46080). This proposal constitutes the final finding for the petitioned action. The Service did not receive any new information in response to the November 1, 1990 notice. The portion of this proposal to list Myrtle's silverspot butterfly is largely based on scientific and commercial information on the species, various scientific papers and unpublished reports available to the Service (Hammond 1980, McCorkle 1980, McCorkle and Hammond 1988), and information gathered from several entomologists, including Mr. Sterling Mattoon and Mr. John Steiner.

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 factors described in section 4(a)(1). These factors and their application to *Chorizanthe howellii* Goodman (Howell's spineflower); *Chorizanthe valida* Watson (Sonoma spineflower); *Erysimum menziesii* (Hooker) Wettstein Menzies' wallflower); *Gilia tenuiflora* Bentham ssp. *arenaria* (Bentham) A. & V. Grant (Monterey gilia); *Layia carnosa* (Nuttall) torrey & A. Gray (beach layia); *Lupinus tidestromii* Greene (clover lupine); and Myrtle's silverspot butterfly (*Speyeria zerene myrtleae* dos Passos & Grey) are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range.* All seven species proposed herein (*Chorizanthe howellii*, *Chorizanthe valida*, *Erysimum menziesii*, *Gilia tenuiflora* ssp. *arenaria*, *Layia carnosa*, *Lupinus tidestromii* and Myrtle's silverspot butterfly) are restricted to the coastal foredunes, coastal dune scrub communities, and/or adjacent sandy habitats occupied by coastal scrub or coastal prairie of the coastal dunes of northern and central California. The imminent threat facing these species and their associated habitats is the ongoing and threatened destruction and adverse modification of

these dune systems by commercial and residential development, off-road vehicle use, trampling by hikers and equestrians, sand mining, and disposal of dredged material from adjacent bays and waterways.

Chorizanthe howellii is endemic to the Tenmile River dune system, which is immediately north of the community of Fort Bragg. All known sites for this species occur within MacKerricher State Park. Because of a lack of any preservation or management stategy for *C. howellii* on park land, the species is threatened by off-road vehicle use and trampling by hikers and equestrians (CNDDB, *in litt.*, November 25, 1985).

Chorizanthe valida is restricted to one population within the Point Reyes National Seashore, in Marin County. The species occurs in sandy places within coastal prairie near the south end of Abbotts Lagoon, which is immediately adjacent to the "Point Reyes" dune system. Other historical populations within the national seashore have been lost, and development probably eliminated *C. valida* from the Sebastopol/Petaluma area in Sonoma County. Because cattle ranching at Point Reyes is considered part of the cultural heritage of western Marin County, the lone population still occurs within an active cattle ranch (Davis and Sherman (1990). The National Park Service has fenced most of the remaining population. Although the preliminary results of a National Park Service monitoring study suggest that the species is not sought after by cattle for forage, the plants within the exclosure did grow taller than their counterparts outside the exclosure. The overall effect of grazing is not well understood and needs further study (Davis and Sherman 1990).

Erysimum menziesii is discontinuously distributed in the coastal foredune community of four dune systems: Humboldt Bay, in Humboldt County; Tenmile River, in Mendocino County; and Monterey Bay and Monterey Peninsula in Monterey County. All known populations have been threatened by commercial and residential development, off-road vehicle use, trampling by hikers and equestrians, sand mining, and/or disposal of dredged material from adjacent bays and waterways. Although three of the four dune systems harboring *E. menziesii* are owned, in part, by the State of California or the Federal government, this public ownership amounts to less than 10 percent of the species' habitat. Moreover, State and Federal lands remain subject to heavy recreational use by off-road vehicle and hang-glider enthusiasts, hikers, and/or equestrians. With the exception of the Lanphere-Christensen Dunes Preserve owned by The Nature Conservancy, the privately owned stands of *E. menziesii*, including the approximately 642 acres of dunes and former dunes on the Samoa Peninsula owned by the City of Eureka, are adjacent to expanding urban centers (e.g., Eureka, Monterey Peninsula) and would be adversely affected by the on-going urban expansion of coastal communities (e.g., $25 million port expansion on the Samoa Peninsula, residential and commercial development within the Marina Dunes in Monterey County).

Gilia tenuiflora ssp. *arenaria* is restricted to isolated sites within coastal dune scrub in the Monterey Bay and Monterey Peninsula dune systems in Monterey County. The construction of a golf course in 1987 near Spanish Bay on the Monterey Peninsula eliminated a portion of a population of *G. tenuiflora* ssp. *arenaria*. The developer attempted to mitigate for the project via the transplantation of this subspecies, *Erysimum menziesii*, and *Lupinus tidestromii* on an artificial dune. However, the effort "has not been successful" (Vernal Yadon, Pacific Grove Natural History Museum, pers. comm., April 14, 1989). Though a portion of perhaps the largest population of *G. tenuiflora* ssp. *arenaria* occurs on State land (i.e., Salinas River State Beach), the area continues to be adversely affected by off-road vehicle use, and trampling by hikers and equestrians. Commercial and residential development near Marina, Seaside, Sand City, and on the Monterey Peninsula threatens the remaining populations.

Layia carnosa was discontinuously distributed within the coastal foredunes of seven dune systems: the Humboldt Bay dune system in Humboldt County; two isolated dune systems near the mouth of McNutt Gulch and south of the mouth of the Mattole River in Humboldt County; the Point Reyes dune system in Marin County; the San Francisco Peninsula in San Francisco County; the Monterey Peninsula dune system in Monterey County; and the Santa Ynez River dune system in Santa Barbara County. According to the CNDDB, the Little River migrated north and eroded away the dune habitat near the river mouth. As a result, the northernmost occurrence of *L. carnosa*, which is part of the Humboldt Bay dune system, is extinct. Urbanization destroyed the dunes in San Francisco while the southernmost locality of the species, which is on Vandenberg Air Force Base, has not been seen since 1929. Recreational, commercial, and residential development probably caused the extinction of the northernmost sites of *L. carnosa* on the Monterey Peninsula. Although portions of the six dune systems harboring the species occur on Federal land (i.e., Bureau of Land Management, Point Reyes National Seashore), these populations, which are often associated with *Erysimum menziesii* (see discussion above), are threatened by off-road vehicle use, trampling by hikers and equestrians, sand mining, disposal of dredged material from adjacent bays and waterways, and/or trampling by livestock. Except for the population on the Lanphere-Christensen Dunes Preserve, the privately owned sites and the lands owned by the City of Eureka are vulnerable to expected future commercial and residential development as well as other activities damaging publicly owned dunes.

Lupinus tidestromii, a coastal foredunes species occasionally associated with *Erysimum menziesii* and *Layia carnosa*, occurs near the mouth of the Russian River and is discontinuously distributed on the Point Reyes and Monterey Peninsulas. Golf course construction eliminated two known sites from the Monterey Peninsula. Though *L. tidestromii* occurs in part on State (i.e., Asilomar State Beach) and Federal land (i.e., U.S. Coast Guard, Point Reyes National Seashore), trampling by hikers and livestock threatens these publicly owned populations. The privately owned sites, which are all from the Monterey Peninsula, are subject to future residential and recreational development.

Myrtle's silverspot butterfly has been extirpated from a significant portion of its former range, which extended from San Mateo County north to the mouth of the Russian River in Sonoma County. The last known collections of the butterfly from the San Francisco Peninsula were made in 1919. Reportedly the Pacifica colony was extirpated in the 1950's. Urban development probably eliminated both populations. The species is now known from only western Marin and Sonoma Counties. The size of the population at Point Reyes National Seashore has been reduced in comparison to previous years, although the cause is unknown (Mattoon, pers. comm, August 4, 1989). In the Sonoma County colonies, uncontrolled human foot traffic harasses, injures, or kills individuals of Myrtle's silverspot butterfly by trampling the early life stages, larval foodplants, or adult nectar sources.

B. *Overutilization for commercial, recreational, scientific, or educational purposes.* Although butterflies are a popular group with insect collectors, capture and permanent removal of individuals generally does not threaten most widespread, numerous species (Pyle *et al.* 1981). However, as studies of another nymphalid butterfly have shown (Gall 1984), the threat of overcollection places the small isolated populations of the Myrtle's silverspot butterfly at risk. Overutilization is not applicable to the six plants; however some plant species have become vulnerable to curiosity seekers following listing.

C. *Disease or predation.* Not known to be applicable for any of the species except perhaps *Chorizanthe valida*, where predation by grazing livestock may threaten the plant.

D. *The inadequacy of existing regulatory mechanisms.* Under the Native Plant Protection Act (Chapter 1.5, section 1900 *et seq.* of the Fish and Game Code) and California Endangered Species Act (Chapter 1.5, section 2050 *et seq.*, Fish and Game Code), the California Fish and Game Commission has listed *Chorizanthe valida, Erysimum menziesii, Layia carnosa,* and a variety of *Lupinus tidestromii* (var. *tidestromii*) as endangered; and *Chorizanthe howellii* and *Gilia tenuiflora* ssp. *arenaria* as threatened (14 California Code of Regulations section 670.2). Though both statutes prohibit the "take" of State-listed plants (Chapter 1.5 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 evidently 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 section 1913).

Myrtle's silverspot butterfly is not specifically protected under state or local law, and is thus not specifically included in State Park or National Park management plans. Collection of this species is prohibited, however, on State Park and National Park land, except by permit. This protection applies to individuals only, and does not prevent the effects of indirect human disturbance such as recreational activities from harming this species and its habitat.

E. *Other natural or manmade factors affecting their continued existence.* The introduction and invasion of California's dune systems by alien plants has adversely affected native dune flora, including the six species proposed herein. Numerous aliens or exotics (e.g., *Ammophila arenaria, Cakile* spp., *Carpobrotus* spp.) have invaded these dune plant communities (Barbour and Johnson 1977, Sauer 1988). Moreover, a California native plant, bush lupine (*Lupinus arboreus*) was introduced into the dune systems north of San Francisco Bay (Miller 1987). Often these introduced and alien plants outcompete and largely supplant the native dune vegetation. For example, European beachgrass and bush lupine dominate much of the dune habitat near Humboldt Bay, while sea-fig carpets extensive portions of the dune habitat north of Fort Bragg and from Marina to Monterey. Absent control and eradication programs, the introduced and alien taxa will continue to invade and eliminate the remaining native plant communities, including the six plants proposed herein and the host plants of Myrtle's silverspot butterfly.

Typically, annuals and other monocarpic plants (individuals that die after flowering and fruiting), like five of the six plants proposed herein, are vulnerable to random fluctuations or variation (stochasticity) in annual weather patterns and other environmental factors (Huenneke *et al.* 1986). Most of the populations of the six plants are isolated from other conspecific populations and consist of a few thousand plants distributed in patches of one acre to a hundred acres or more. Such populations, including the entire species in the case of *Chorizanthe valida*, are vulnerable to stochastic extinction.

As briefly mentioned above under Factor "A", trampling by livestock harms *Layia carnosa* and *Lupinus tidestromii*. In addition, *Chorizanthe valida* and *Erysimum menziesii* grown in areas grazed by livestock. The effect of trampling needs further study. Myrtle's silverspot butterfly occurs in disjunct populations whose long-term persistence may depend upon intercolony movement. The loss of suitable habitat containing larval foodplants and adult nectar sources would make such movement more difficult by increasing the distance the insects must travel to successfully reach other colonies. The effects of grazing on Myrtle's silverspot butterfly and its host plant requires further study. Intensive grazing could cause the loss of larval foodplants and adult nectar sources. However, the elimination of grazing and the complete supression of fires could allow alien plants, such as iceplant and European beach grass, to eliminate colonies of the animal by outcompeting the larval foodplant and the adult nectar resources. Sufficient densities of *Viola*, an important larval foodplant, are especially critical for the long term survival of populations of Myrtle's silverspot butterfly (Mattoon, *in litt.*, August 4, 1989).

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by these species in determining to propose this rule. Based on this evaluation, the preferred action is to list *Chorizanthe howellii, Chorizanthe valida, Erysimum menziesii, Gilia tenuiflora* ssp. *arenaria, Layia carnosa, Lupinus tidestromii*, and Myrtle's silverspot butterfly as endangered. Today these species generally persist as small, isolated populations or "islands" surrounded by urban areas, roads, trails, agricultural lands, competing alien plants, and other lands made unsuitable for these seven taxa by sand mining, the placement of dredged spoils, or foot traffic. Although many of the remaining populations are owned and managed, at least in part, by local, State, or Federal government agencies, the areas owned by local governments remain subject to development, while the other publicly owned areas are adversely affected by trampling, off-road vehicles, hikers, equestrians, other forms of recreation, and occasionally livestock. Such areas also contain alien plants that have outcompeted and supplanted the native vegetation. In addition, stochastic events, which commonly affect small isolated populations, may result in the extirpation of some populations of these species. Because these six plants and butterfly are in danger of extinction throughout all or a signficant portion of their ranges, they fit the definition of endangered as defined in the Act.

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 a species is listed as endangered ro threatened. The Service finds that designation of critical habitat is not prudent for these species at this time. Because the six plants face numerous anthropogenic threats (see Fact A in "Summary of Factors Affecting the Species"), 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 species as either endangered or threatened would publicize the rarity of these plants and,

thus, could make these plants attractive to researchers or collectors of rare plants. The proper agencies have been notified of the general locations and management needs of these plants. As discussed under "Summary of Factors Affecting the Species," Myrtle's silverspot butterfly and its habitat are vulnerable to several activities, some of which, such as the removal of specimens for scientific or personal collections, could be carried out surreptitiously. The precise pinpointing of localities that would result from publication of critical habitat descriptions and maps in the **Federal Register** would increase enforcement problems because this species would be more vulnerable to collecting as well as vandalism to its habitat. The National Park Service, which manages the largest known population of the butterfly, is aware of the insect's presence. Landowners will be notified of the general location and importance of protecting habitat of these species. 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 six plants and butterfly is not prudent at this time. Such designation likely would increase the degree of threat from vandalism, collecting, or other human activities.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain activities. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. Such actions are initiated by the Service following listing. The protection required of Federal agencies and the prohibitions against certain activities involving listed plants are discussed, in part, below.

Section 7(a) of the Act, 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.

Federal activities potentially impacting one or more of the six plants and Myrtle's silverspot butterfly likely will involve recreation-related projects (e.g., off-road vehicle parks) and perhaps grazing practices on Federal land. Populations of four of the six plant species and the butterfly occur, at least in part, on Federal land. A 130-acre portion of the dunes on the Samoa Peninsula, which harbors *Erysimum menziesii* and *Layia carnosa*, is managed by the Bureau of Land Management (BLM). The latter species also occurs within the dunes near the mouth of Mattole River on land managed by BLM. *Chorizanthe valida*, *Layia carnosa*, *Lupinus tidestromii*, and Myrtle's silverspot butterfly are discontinuously distributed within the dunes or in adjacent sandy habitats along the western shore of Point Reyes National Seashore. *Erysimum menziesii* occurs within the dunes near the Point Pinos lighthouse on the Monterey Peninsula on land controlled by the U.S. Coast Guard. A historical site of *Layia carnosa* is administered by the Department of Defense at Vandenberg Air Force Base. Activities relating to the maintenance of harbors and waterways, and other actions regulated by the U.S. Army Corps of Engineers (Corps) under the River and Harbor Act of 1899 and section 404 of the Clean Water Act may affect the six plants and butterfly. Such Federal activities, including recreation-related projects and perhaps grazing practices on Federal land, may be subject to section 7 review.

The Act and its implementing regulations found at 50 CFR 17.61, 17.62, and 17.63 set forth a series of general prohibitions and exceptions that apply to all endangered plants. With respect to the six plants proposed herein, 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 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; or to remove and reduce to possession these species from areas under Federal jurisdiction; or to maliciously damage or destroy any such plants 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 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 Myrtle's silverspot butterfly, these prohibitions, in part, would make it illegal for any person subject to the jurisdiction of the United States to take (include harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or attempt any of these), 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 is also 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.

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 plants under certain circumstances. Permits also may be issued to carry out otherwise prohibited activities involving endangered wildlife species under certain circumstances. Regulations governing permits for endangered wildlife 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, for incidental take in connection with otherwise lawful activities, and economic hardship under certain circumstances. The Service anticipates few trade permits would ever be sought or issued for any of the six plants or the butterfly.

Requests for copies of the regulations on listed plants and wildlife 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, VA 22203–3507 (703/358–2104).

Public Comments Solicited

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

(1) Biological, commercial trade, or other relevant data concerning any threat (or lack thereof) to *Chorizanthe howellii, Chorizanthe valida, Erysimum menziesii, Gilia tenuiflora* ssp. *arenaria, Layia carnosa, Lupinus tidestromii,* or Myrtle's silverspot butterfly;

(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 and distribution of these species; and

(4) Current or planned activities in the ranges and habitats of these species and their possible impacts on these species.

Any final decision on this proposal concerning these species 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 the proposal. Such requests must be made in writing and addressed to the Field Supervisor of the Sacramento Field Office (see **ADDRESS** section).

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined pursuant to 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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Authors

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List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and record keeping requirements, Transportation.

Proposed Regulation Promulgation

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:

PART 17—[AMENDED]

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; Public Law 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 "Insects", to the List of Endangered and Threatened Wildlife:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
INSECT							
*	*	*	*	*	*	*	
Butterfly, Myrtle's silverspot.	*Speyeria zerene myrtleae*	U.S.A. (CA)	NA	E		NA	NA
*	*	*	*	*	*	*	

3. It is proposed to amend § 17.12(h) by adding the following, in alphabetical order under the families indicated, to the List of Endangered and Threatened Plants.

§ 17.12 Endangered and threatened plants.

* * * * *

(h) * * *

Species		Historic range	Status	When listed	Critical habitat	Special rules
Scientific Name	Common name					
Asteraceae—Aster family:						
*	*	*	*	*	*	
Layia carnosa	beach layia	U.S.A. (CA)	E		NA	NA
*	*	*	*	*	*	
Brassicaceae—Mustard family:						
*	*	*	*	*	*	
Erysimum menziesii	Menzies' wallflower	U.S.A. (CA)	E		NA	NA
*	*	*	*	*	*	
Fabaceae—Pea family:						
*	*	*	*	*	*	
Lupinus Tidestromii	clover lupine	U.S.A. (CA)	E		NA	NA
*	*	*	*	*	*	
Polemoniaceae—Phlox family:						
*	*	*	*	*	*	
Gilia tenuiflora ssp. *arenaria*	Monterey gilia	U.S.A. (CA)	E		NA	NA
*	*	*	*	*	*	
Polygonaceae—Buckwheat family:						
*	*	*	*	*	*	
Chorizanthe howellii	Howell's spineflower	U.S.A (CA)	E		NA	NA
Chorizanthe valida	Sonoma spineflower	U.S.A. (CA)	E		NA	NA
*	*	*	*	*	*	

Dated: March 6, 1991.

Richard N. Smith,

Acting Director, U.S Fish and Wildlife Service.

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