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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018-AE76

Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for *Chlorogalum purpureum* (Purple Amole), a Plant From the South Coast Ranges of California

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service, determine threatened status pursuant to the Endangered Species Act of 1973, as amended (Act), for the California plant, *Chlorogalum purpureum* (purple amole). This species comprises two varieties, *C. p. var. purpureum* and *C. p. var. reductum*. *Chlorogalum purpureum* var. *purpureum* is known only from the south coast ranges in Monterey County, on lands managed by the Department of the Army at Fort Hunter Liggett. It is threatened by loss and alteration of habitat, direct loss of plants from construction and use of military training facilities and from military field training activities, displacement by nonnative annual grasses, and potentially by alteration of fire cycles due to military training. Livestock grazing is a potential threat, as grazing may be reinstated in occupied habitat in the future. The other variety, *C. p. var. reductum*, is known only from two sites in the La Panza region of the coast ranges in San Luis Obispo County, on U.S. Forest Service and private lands. It is threatened by illegal vehicle trespass into the population on Forest Service land, road maintenance, displacement by nonnative annual grasses, and by livestock grazing depending upon the intensity of grazing use within the population area. This final rule implements the Federal protection and recovery provisions afforded by the Act. Although this rule lists *Chlorogalum purpureum* at the species level, each variety should be treated as a separate taxonomic unit for the purposes of applying the section 7 jeopardy standard and identifying recovery units, if applicable.

DATES: This rule is effective April 19, 2000.

ADDRESSES: The complete file for this rule is available for inspection, by appointment, during normal business hours at the Ventura Fish and Wildlife Office, U.S. Fish and Wildlife Service, 2493 Portola Road, Suite B, Ventura, California 93003.

FOR FURTHER INFORMATION CONTACT: Carl Benz, Assistant Field Supervisor, Listing and Recovery, at the address above (telephone 805/644-1766; facsimile 805/644-3958).

SUPPLEMENTARY INFORMATION:

Background

Chlorogalum purpureum was first described by Brandegees in 1893 from specimens collected in the Santa Lucia Mountains by William Vortriede a year earlier (Brandegee 1893). In 1904, E.L. Greene (1904) published the new combination *Laothoe purpurea* when he discovered that the genus name *Laothoe* had been published earlier than *Chlorogalum*. However, R.F. Hoover (1940) reinstated use of the name *Chlorogalum* through the rule of *nomen conservandum*. Hoover (1964) described the variety *reductum* (Camatta Canyon amole), first collected in the late 1940s, based on its shorter stature compared to the nominative variety. This nomenclature was retained in the most recent treatment of the genus (Jernstedt 1993). These two varieties comprise the entire species.

Chlorogalum purpureum is a bulb-forming perennial herb in the lily family (Liliaceae). It has a basal rosette of linear leaves 2 to 5 millimeters (mm) (0.1 to 0.2 inches (in)) wide with wavy margins. A widely branching stem supports bluish-purple flowers with six recurved tepals (petals and sepals that have a similar appearance). The stems of *C. p. var. purpureum* are 25 to 40 centimeters (cm) (10 to 16 in) high, whereas those of *C. p. var. reductum* are only 10 to 20 cm (4 to 8 in) high (Hoover 1964, Jernstedt 1993). *Chlorogalum purpureum* is the only member of the genus with bluish-purple flowers that open during the day (Jernstedt 1993).

Reproduction in *Chlorogalum purpureum* is primarily by seed. Each flower contains six ovules, although not all develop into seeds in the wild (Hoover 1964). The species is reported to be self-compatible, and insect pollination appears to result in increased seed set (D. Wilken, Santa Barbara Botanic Garden, *in litt.* 1998; M. Elvin, U.S. Fish and Wildlife Service, pers. com. 1998). Hoover (1940) reports that clonal reproduction by longitudinal splitting of the bulbs is rare; some splitting has been noted in one population of *C. p. var. reductum* (Alice

Koch, California Department of Fish and Game (CDFG), pers. comm. 1997b).

Chlorogalum purpureum occurs in grassland, oak woodland, and oak savannah between 300 and 620 meters (m) (1,000 and 2,050 feet (ft)) in elevation in the south coast ranges of California. Like other members of the lily family, *C. purpureum* is probably mycorrhizal (develops root-hyphae relationships with a fungus).

Mycorrhizal relationships can aid in nutrient and water uptake by a host plant and can alter growth and competitive interactions between species (Allen 1991).

Chlorogalum purpureum var. *purpureum* is known from oak woodlands and grasslands at three sites near Jolon in Monterey County on lands owned and managed by the Department of the Army (Fort Hunter Liggett). Historically, appropriate habitat may have existed east of the base, in Jolon Valley, but most of the flat areas in that valley have been converted to cropland, pasture, or vineyards. At Fort Hunter Liggett, the plant occurs on flat or gently sloping terrain with a gravelly surface underlain by clay soils, often where other herbaceous vegetation is sparse.

Of the three localities of *Chlorogalum purpureum* var. *purpureum*, one comprises discontinuous and fragmented patches of plants scattered over an area 7 to 9 kilometers (km) (4 to 6 miles (mi)) long and about 5 km (3 mi) wide in the cantonment (housing and administration area), the Ammunition Supply Point, adjacent Training Area 13, and the boundary of Training Area 10 (U.S. Army Reserve Command 1996; map provided by D. Hines, *in litt.* 1998; Painter and Neese 1998). While some of the discontinuities in distribution are due to unsuitable intervening habitat, other patches have been fragmented by roads, the historical settlement of Jolon, and military training facilities. No population counts have been made at this site, but estimates of some areas within it suggest that it supports several thousand plants (U.S. Department of the Army 1997, Painter and Neese 1998). The second locality is about 4 km (2.5 mi) to the southeast in Training Area 25. The taxon is patchily distributed in an area of about 6 square km (2 square mi) that is laced with vehicle tracks and dirt roads. At one location there, 400 to 500 plants have been recorded (Painter and Neese 1998), but the entire site may support several thousand individuals. The third and southernmost locality is at the boundaries of Training Areas 23, 24, and 27. This is the largest known site and contains plants in high densities. Following a fire that may have

promoted flowering, this site was estimated to support up to 10,000 plants (Painter and Neese 1998).

The primary threats to *Chlorogalum purpureum* var. *purpureum* are the loss, fragmentation, and alteration of habitat and direct elimination of plants from construction and use of military training facilities, military field training activities, displacement by nonnative annual grasses, and potentially by alteration of fire cycles due to military training. Livestock grazing and associated habitat changes may threaten this taxon if grazing is resumed in occupied habitat in the future.

About 110 km (70 mi) to the south, *Chlorogalum purpureum* var. *reductum* occurs in one region in the La Panza Range of San Luis Obispo County. It is currently known from only two sites. The larger site is located adjacent to a two-lane State highway; a smaller site is located approximately 5 to 8 km (3 to 5 mi) farther to the south. The larger locality is located on a narrow, flat-topped ridge or plateau supporting blue oak (*Quercus douglasii*) savannah. This plateau, bisected by a highway, is probably the remains of an ancient elevated alluvial terrace (a terrace consisting of material deposited by running water), most of which has been eroded away by surrounding drainages that are now 90 to 120 m (300 to 400 ft) below the plateau (H. Ehrenspeck, *in litt.* 1994). The soils have been described as well-drained red clays with a large component of gravel and pebbles (Hoover 1964, Lopez 1992). North of the highway, the population occurs on private lands. South of the highway, it grows on public lands managed by the U.S. Forest Service (USFS) on Los Padres National Forest (LPNF). A few plants may extend into the California Department of Transportation (Caltrans) right-of-way along the highway. Caltrans has designated both sides of the highway right-of-way in this area as Botanical Management Areas. These areas are to be managed for their special resource values (D. Magney, consulting biologist, pers. comm. 1999).

This population is patchily distributed over the plateau and has been estimated to occupy just 2 to 3 hectares (ha) (fewer than 8 acres (ac)) south of the highway and probably somewhat less on the highway's north side (Gaskin 1990; Lopez 1992; M. Borchert and K. Danielsen, USFS, pers. comm. 1997). A graded dirt road about 10 m (30 ft) wide bisects the portion of the population on public land. The road leads to private inholdings and residences on the LPNF and is bounded on either side by a pipe barrier that was installed in 1989 or 1990 to prevent off-

highway vehicles (OHVs) from using the site (David Magney, biological consultant, pers. comm. 1997). A removable portion of the barrier and a barbed wire section of fence have been routinely breached by OHVs. Such illegal use was noted to be increasing from 1995 through 1997 (A. Koch, California Department of Fish and Game (CDFG), *in litt.* 1997a). In 1998, after publication of the proposed rule to list the species (63 FR 15142), the Forest Service replaced the broken section of barbed wire fence with a single post barrier and rewelded sections of broken pipe barrier elsewhere.

Because the site north of the highway is on private land, estimates of abundance or recent information on habitat conditions are not currently available. Population size estimates south of the highway, on public lands, have ranged from 1,000 individuals to several hundred thousand individuals (Borchert 1981, Warner 1991, Borchert *et al.* 1997). Some of this variability reflects changes in the above-ground presence of plants, since bulbs may remain dormant during years with unfavorable growing conditions. Monitoring along a 100 m (330 ft) transect showed that plant numbers were relatively stable within the transect between 1991 and 1997 (Borchert *et al.* 1997). This transect is not located in an area where vehicle trespass has continued to occur and is, therefore, not representative of the status of the population in areas subject to OHV activity. That portion of the population where the transect is located is accessible to livestock.

The second known locality of *Chlorogalum purpureum* var. *reductum* was first documented by botanists in the mid 1990s. It is located 5 to 8 km (3 to 5 mi) south of the LPNF population in an area with similar soils and topography (David Chipping, California Polytechnic State University, *in litt.* 1997). The taxon has been estimated to occupy less than 0.1 ha (0.25 ac) and consists of several hundred plants in two or more patches on private land. The landowner has expressed an interest in the plant and its protection (D. Chipping, *in litt.* 1997).

Chlorogalum purpureum var. *reductum* is threatened by illegal vehicle trespass into the larger locality on LPNF.

Livestock use may be detrimental to this taxon depending upon the intensity of livestock use and the extent to which livestock congregate in the population area. The effects of livestock grazing on this taxon need further evaluation.

Previous Federal Action

Federal Government actions on this species began as a result of section 12 of the Act, which directed the Secretary of the Smithsonian Institution to prepare a report on those plants considered to be endangered, threatened, or extinct in the United States. This report (House Doc. No. 94-51) was presented to Congress on January 9, 1975, and included *Chlorogalum purpureum* var. *purpureum* and *C. p.* var. *reductum* as endangered. On July 1, 1975, we published a notice in the **Federal Register** (40 FR 27823) of our acceptance of the report as a petition within the context of section 4(c)(2) (petition provisions are now found in section 4(b)(3) of the Act) and of our intention to review the status of the plant taxa named therein.

On June 16, 1976, we 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. This list, which included *Chlorogalum purpureum* var. *purpureum* and *C. p.* var. *reductum*, was assembled on the basis of comments and data received by us and by the Smithsonian Institution in response to House Document No. 94-51 and the July 1, 1975, **Federal Register** publication. General comments received in relation to the 1976 proposal were summarized in an April 26, 1978, **Federal Register** publication (43 FR 17909). In 1978, amendments to the Endangered Species Act 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. Subsequently, on December 10, 1979, we published a notice (44 FR 70796) of the withdrawal of the portion of the June 16, 1976, proposal that had not been made final, along with four other proposals that had expired. *Chlorogalum purpureum* var. *purpureum* and *C. p.* var. *reductum* were included in that withdrawal notice.

On December 15, 1980, we published an updated Candidate Notice of Review (NOR) for plants (45 FR 82480). This notice included *Chlorogalum purpureum* var. *purpureum* and *C. p.* var. *reductum* as "category 2 candidates." Category 2 candidates were defined as taxa for which we had data on biological vulnerability and threats indicating that listing was possibly appropriate, but the data were not sufficient to support proposed rules. The two *Chlorogalum* taxa were

included as category 1 candidates in the revised plant NOR is published in the **Federal Register** on September 27, 1985 (50 FR 39526), February 21, 1990 (55 FR 6184), and September 30, 1993 (58 FR 51144). Category 1 candidates were defined as those taxa for which we had on file sufficient information on biological vulnerability and threats to support the preparation of listing proposals, but issuance of proposed rules was precluded by other pending listing proposals of higher priority. The two *Chlorogalum* taxa were included as candidates in the NOR published on February 28, 1996 (61 FR 7596), as well as in the NOR published on September 19, 1997 (62 FR 49398). The definition formerly applied to category 1 candidates now applies to candidates as a whole. On March 30, 1998, we published a proposed rule in the **Federal Register** (63 FR 15142) to list *Chlorogalum purpureum* as threatened.

The processing of this final rule conforms with our fiscal year 2000 listing priority guidance, published in the **Federal Register** on October 22, 1999 (64 FR 57114). The guidance establishes the order in which we will process rulemakings. The guidance calls for giving highest priority to handling emergency situations (Priority 1). With the exception of emergency actions, all other listing activities may be undertaken simultaneously; however, relative priorities for non-emergency listing actions may be based on the following priority levels. Processing final decisions on pending proposed listings are priority 2 actions. Priority 3 actions are the resolution of the conservation status of species identified as candidates (resulting in a new proposed rule or a candidate removal). Priority 4 actions are the processing of 90-day or 12-month administrative findings on petitions. Critical habitat determinations, which were previously included in final listing rules published in the **Federal Register**, may now be processed separately, in which case stand-alone critical habitat determinations will be published as notices in the **Federal Register**. This final rule is a priority 2 action and is being completed in accordance with the current listing priority guidance.

Summary of Comments and Recommendations

In the March 30, 1998, proposed rule (63 FR 15142), all interested parties were requested to submit factual reports or information that might contribute to development of a final rule. Appropriate Federal agencies, State agencies, county and city governments, scientific organizations, and other interested

parties were contacted and requested to provide comments. Newspaper notices inviting public comment were published in the San Luis Obispo County *Telegram-Tribune* on April 2, 1998, and in the *Monterey Herald* on April 10, 1998. The comment period closed on May 29, 1998.

Nine comments were provided by individuals, organizations, and agencies on the proposed rule. Six of the commenters supported the listing, and two commenters opposed it. Several commenters provided additional technical information that, along with other clarifications, has been incorporated into the "Background" or "Summary of Factors Affecting the Species" sections of this final rule. Issues raised by commenters, and our response to each, are summarized as follows:

Issue 1: Two commenters noted that *Chlorogalum purpureum* var. *purpureum* is present in old roadbeds and areas that have been used or disturbed by vehicles. They speculated that disturbance may be beneficial to the plant; one commenter noted that we did not address this possibility in the proposed rule.

Our response: Observations of flowering *Chlorogalum purpureum* in vehicle tracks and scraped areas do exist (Gaskin 1990, Koch 1997). Because *C. purpureum* grows from an underground bulb, some mature plants may be able to survive situations when the above-ground portions are crushed by vehicles. The reduction in other vegetation may make the flowering *C. purpureum* more visible, as even a light cover by annual grasses can obscure the flowers of this species due to its short stature. It is also possible that the removal or suppression of competing vegetation that may occur due to multiple passes of a vehicle may temporarily make available greater light, water, or nutrient resources to the surviving *C. purpureum* plants. Mature *C. purpureum* plants may respond to this temporary increase in available resources by flowering. However, it would be inappropriate to therefore conclude that the species responds "favorably" to disturbance. The type of "disturbance" and its effects on all life history stages of the plant must be considered. For instance, increased flowering has been observed in many bulb-forming plants following fires (Gill 1977, Zedler and Zammit 1989). While scraping or vehicle use may mimic the removal of vegetation that occurs following fires, these activities do not mimic the other effects of fire (e.g., conversion of thatch and other plant biomass to ash, alteration of nutrient

availability, and soil chemistry (Gill 1977, Zedler and Zammit 1989)). In addition to crushing or removal of competing vegetation, vehicle-use in grassland habitats is also likely to cause soil compaction, loss of cryptogamic crusts, and introduction and spread of nonnative plant species; damage mycorrhizae; and crush seedlings, adult rosettes, and flowering stalks. Seedling establishment of *C. purpureum* var. *reductum* in compacted soils is reduced in comparison to establishment in loosened soils (Koch 1997). While *C. purpureum* has evolved in systems that are periodically "disturbed" by events such as wildfire, the human-caused "disturbances" addressed here do not mimic those with which the plant has evolved, have many unfavorable effects (as mentioned above), and take place in an environment where nonnative invasive plants are now established. We are not aware of any evidence to suggest that vehicle use, soil surface scraping, and excessive trampling in populations of *C. purpureum* would be other than detrimental to their long-term persistence.

Issue 2: One commenter suggested that quantitative data is inadequate to support listing *Chlorogalum purpureum* var. *purpureum* and that threats to this taxon discussed in the proposed rule should be considered only "potential" threats. The commenter stated that the number of documented locations of *C. p. var. purpureum* has increased, since 1994, from 5 to about 100, with few documented losses.

Our response: The Act requires that we use the best available scientific information as the basis for our listing decisions. In addition to published papers in peer-reviewed journals, scientific reports, letters, and personal correspondence, we consider professional judgment and expert opinion by knowledgeable biologists in making decisions. We have assessed the best available information provided by the Army at Fort Hunter Liggett and by other parties on the activities occurring in the locations supporting *C. p. var. purpureum*. While the Army has been responsive and shown initiative in implementing their environmental review process and while this may benefit *C. p. var. purpureum* and other sensitive plant species, we conclude that the activities occurring in the populations of *C. p. var. purpureum*, and the damage to associated soils and vegetation, are of sufficient magnitude that the taxon is imperiled and meets the definition of "threatened" under the Act. To assess the comment on the number of locations of *C. p. var. purpureum*, we compared the data on

known locations of *C. p. var. purpureum* submitted by this commenter with data we had received previously from this commenter and others on the locations of *C. p. var. purpureum* and found no substantial difference, other than how the locations are described. For instance, in the proposed rule, we described the northern site of *C. p. var. purpureum* as patches of plants occurring over an area 7 to 9 km (4 to 6 mi) long, while the commenter has this area mapped as about 60 individual locations. Because many of the patches of *C. p. var. purpureum* in this area grow within 100 meters of one another, gene flow may be occurring between them, and they may function as one or multiple populations. Therefore, we concluded that it is most appropriate to describe the distribution of plants in this area as a single discontinuous locality. Plants had been documented in this locality by 1994.

Issue 3: One commenter stated that the effects of military training activities on *Chlorogalum purpureum* var. *purpureum* are not known and that no evidence exists that foot traffic resulting from use of the obstacle course will degrade the *C. p. var. purpureum* sites. In response to our observation that no areas where this taxon occurs are off-limits to training, the commenter stated that eliminating military training from *C. p. var. purpureum* localities may not be needed because the plant is doing well at Fort Hunter Liggett under current conditions.

Our response: We disagree that the plant is doing well at Fort Hunter Liggett under current conditions. Military training activities, including field maneuvers, occur in the populations of *Chlorogalum purpureum* var. *purpureum*. Their effects are most evident in the locality in Training Area 25. Field maneuvers typically involve tracked and wheeled vehicles, placement of temporary housing (tents) for troops, digging of latrines, protection berms or bunkers, and use by hundreds of troops (U.S. Army Reserve Command 1996). Field maneuvers and bivouacking (temporary encampments) have resulted in soil compaction, ruts in the soil that alter microhabitat characteristics (Painter and Neese 1998; D. Steeck, pers. obs. 1998; J. Chesnut, consulting biologist, *in litt.* 1998), and loss of most herbaceous vegetation in areas where troop use is heavy (D. Steeck, pers. obs. 1997, 1998) and may result in direct crushing or trampling of vegetative or reproductive parts of purple amole. Such activity may also increase the spread or abundance of nonnative plant species. Other training activities involve the use of developed facilities, such as

obstacle courses. According to their records (Hormann 1996), the Army at Fort Hunter Liggett avoided placing individual obstacles for the obstacle course directly on plants, however the obstacles were placed within the population. Use of the obstacle course is likely to reduce seedling establishment through crushing and soil compaction, and the construction of the course and its use may increase the abundance of nonnative grasses and weedy species on the site. We conclude that adequate evidence exists that military training activities, including field maneuvers and development and use of training facilities such as the obstacle course, are detrimental to *C. p. var. purpureum* at Fort Hunter Liggett.

Issue 4: One commenter stated that, because the historical distribution of *Chlorogalum purpureum* var. *purpureum* is not known, the extent of fragmentation cannot be known.

Our response: We agree that the extent of fragmentation of *Chlorogalum purpureum* var. *purpureum* populations is not known. Patches of plants may be discontinuous due to differences in soils and microhabitat conditions, even without human-induced changes to the landscape. However, in numerous places at Fort Hunter Liggett, plants occur up to, and on both sides of, a road or other human structure, strongly suggesting that they were once continuous (for instance, plants within the "triangle" of roads at the entrance gate, those on both sides of Mission Creek Road and on both sides of the dirt road leading to the rifle range and conditioning course). In these cases, depending on pollinator type and amount and type of converted habitat, gene flow from seed and pollen dispersal between the isolated or fragmented patches of plants will be reduced. We conclude that the historical settlement of Jolon on Fort Hunter Liggett and the construction and use of training areas, roads, and buildings have fragmented and isolated patches of *C. p. var. purpureum*.

Issue 5: One commenter suggested that we should not have included *Chlorogalum purpureum* var. *purpureum* in the proposed rule because it had a candidate listing priority number of 9, suggesting less threat than that for *C. p. var. reductum*, which had a candidate listing priority number of 3.

Our response: Assigning listing priority numbers to candidates, based on immediacy and degree of threat, is simply a method to help us prioritize the order in which candidates will be proposed for listing. By definition, a candidate species is one for which we

have determined that we have adequate information on file to propose listing. When candidate species occur together in the same habitat or have close taxonomic affinities, we often include them together in a listing package to increase efficiency. The two taxa addressed in this listing make up the entire species *Chlorogalum purpureum*, so it is appropriate to address the entire species in one rule.

Issue 6: One commenter stated that a new road was not constructed at Fort Hunter Liggett as had been reported in 1988 by an observer. The commenter stated that Fort Hunter Liggett simply repaved an abandoned road that had fallen into disrepair. An aerial photograph from 1950 was presented to document the statement.

Our response: We have reviewed the photo and agree that it appears that the road in question was in place by 1950. The area where the plants are located (the commenter has illustrated their location on the photo) does not appear to have been surrounded by roads in 1950, however, suggesting that additional road construction since 1950 has occurred and has resulted in their being left in a triangular-shaped area, bounded on all sides by roads.

Issue 7: One commenter clarified that, since 1995, under the Army's environmental review procedures, projects have been modified in all cases where it was necessary to protect the *Chlorogalum purpureum* var. *purpureum*, not in just some cases, as the proposed rule described.

Our response: We are pleased to learn that, during the environmental review process, projects have been modified in all cases where needed to reduce impacts to this taxon. Our assessment is that these modifications have not always been sufficient. The wording in this final rule has been altered to reflect this determination. We also recognize that some activities that threaten this plant, such as bivouacking, are not addressed through the environmental review process but cause substantial modification of habitat for *Chlorogalum purpureum*, particularly in Training Area 25.

Issue 8: One commenter stated that *Chlorogalum purpureum*, particularly var. *reductum*, should be listed as endangered, due to the combined effects of livestock grazing and OHV trespass, which are degrading a significant portion of this taxon's range.

Our response: Although *Chlorogalum purpureum* var. *reductum* occupies a very limited area, the taxon is abundant within that area. The species is long-lived, and the threat of OHV trespass has been partially addressed by the

USFS through fencing, although more rigorous monitoring and maintenance of the barriers are needed. Transect data have shown that recruitment is occurring in the transect area where numbers of *C. p. var. reductum* have been relatively stable over the last 7 years (Borchert *et al.* 1997). The transect is in an area accessible to cattle, but is not in an area where OHV trespass has continued to occur and cannot be considered representative of the population. We have concluded that, while not currently in danger of extinction, *C. p. var. reductum* is “* * * likely to become endangered in the foreseeable future throughout all or a significant portion of its range” (the definition of “threatened”) if impacts from increasing OHV trespass, road use and maintenance, livestock grazing, and potential displacement by nonnative species continue or increase.

Issue 9: One commenter stated that the Service, in the proposed rule, failed to address means, other than grazing, of reducing the impacts of invasive nonnative species on *Chlorogalum purpureum* var. *reductum*. The commenter also requested that the final rule include measures the USFS will take to reduce vehicle trespass into the population area.

Our response: We do not typically make management recommendations in proposed or final rules. Therefore, in this rule we have not included a discussion of methods to reduce the impacts of nonnative plants on *Chlorogalum purpureum* populations or the measures by which the USFS will address vehicle trespass. The latter will be addressed in the consultation process under section 7 of the Act, and both issues will be addressed through the recovery planning process after the species is listed. In the proposed rule, we noted that previous reports had suggested that *C. purpureum* might benefit from grazing if it reduced the abundance of nonnative annual grasses that occur in the population area and which may displace *C. purpureum*. These reports were not based on monitoring data, as none is available that address the effects of livestock on nonnative grasses at this site. In the proposed rule, we did not advocate or oppose livestock grazing as a means to reduce the effects of nonnative plants on *C. purpureum*; we believe studies investigating the effects of livestock grazing on *C. purpureum* are necessary should cattle continue to have access to the habitat of this taxon on Federal lands.

Issue 10: One commenter stated that our argument for not designating critical habitat was not well justified and that

a designation of critical habitat would provide additional benefit to *Chlorogalum purpureum* var. *reductum* through the section 7 process.

Our response: We are deferring a critical habitat determination for *Chlorogalum purpureum* in accordance with the Final Listing Priority Guidance for FY 2000 (64 FR 57114). The Critical Habitat section in this rule contains further discussion of this issue.

Issue 11: One commenter stated that we lack jurisdiction to enact the proposed rule and that the rule should be withdrawn since there is no connection between regulation of these plants and a substantial effect on “interstate commerce.”

Our response: Congress does have the authority pursuant to the Commerce Clause of the U.S. Constitution, to extend the regulatory protection of the Act to species that occur in a single site, such as the one in this final rule. A recent federal court case has upheld this authority (*National Association of Home Builders v. Babbitt*, 130 F. 3d 1041 (D.C. Cir. 1997), cert. denied 118 S.Ct. 1998).

Peer Review

In accordance with our peer review policy published on July 1, 1994 (59 FR 34270), we solicited the expert opinions of three peer reviewers regarding pertinent scientific or commercial data and assumptions relating to population status and biological and ecological information for *Chlorogalum purpureum*. Two of the three peer reviewers provided responses. Both respondents supported the listing of the species and described the information included in the rule as factually correct to the best of their knowledge. Both provided technical corrections. One reviewer also provided additional detailed technical information and references pertaining to threats to the species which the reviewer suggested needed more thorough discussion than that provided in the proposed rule.

Summary of Factors Affecting the Species

Section 4 of the Act and the regulations (50 CFR part 424) that 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 *Chlorogalum purpureum* Brandege (purple amole) are as follows:

A. The present or threatened destruction, modification, or curtailment of its habitat or range.

Chlorogalum purpureum var. *purpureum* is known only from three localities on Fort Hunter Liggett, Monterey County. The northern site comprises discontinuous and fragmented patches over a 7 to 9-km (4 to 6-mi) area in the cantonment (housing and command center), several training areas, the Ammunition Supply point, and near the Jolon entrance gate. Habitat for *C. p. var. purpureum* has been destroyed, and patches of plants have been isolated and fragmented by the historical settlement of Jolon, roads, and the construction and use of training facilities over the past several decades. In the last 50 years, a large group of plants near the Jolon entrance gate was isolated by the addition of a new road (aerial photos from Hines *in litt.* 1998). Bounded on all sides by roads, this area was used as a vehicle parking area in the 1980s. Representatives from Fort Hunter Liggett and the Monterey Chapter of the California Native Plant Society (CNPS) cooperated in constructing barriers to reduce impacts to the area (Matthews and Branson 1988). Although the military has committed to maintaining these protective barriers, this site remains vulnerable due to its proximity to roads and isolation from surrounding patches of plants. For example, in 1996 a vehicle mishap resulted in a large piece of earth-moving machinery entering the site; its tracks through the population were still evident in September 1997 (Painter and Neese 1998; D. Steeck, U.S. Fish and Wildlife Service, pers. obs. 1997).

In another portion of this northern locality, the Army recently expanded training facilities (Hormann 1996). Since 1996, a new obstacle course and two small parking areas have been placed in habitat occupied by *Chlorogalum purpureum* var. *purpureum*. Although the obstacles and parking areas themselves were placed to avoid individual patches of plants (Hormann 1996; Hines *in litt.* 1998), foot traffic and use of the training facilities will likely degrade the habitat and eliminate a portion of the population. In addition to the obstacle course and parking areas, the Army has in the past 3 years constructed a confidence course and upgraded a firing range along the stretch of dirt road adjacent to the locality. The existence of some training facilities made this area more attractive for additional construction because the facilities could be located within walking distance of one another (Hormann 1996). For the same reason, this area is likely to be attractive for the siting of future training facilities,

although the Army recently stated that they do not intend to develop the area further and are willing to enter into an agreement stating this decision (Hines *in litt.* 1998).

The second locality is in Training Area 25, which is used for field training maneuvers and is crossed by numerous dirt roads and tracks. Field maneuvers at Fort Hunter Liggett involve setting up temporary camps (bivouac sites), which may include excavations for latrines and washing facilities, bunkers, and protective berms. Field maneuvers routinely involve hundreds of troops and support staff as well as both tracked and wheeled vehicles (U.S. Army Reserve Command 1996). Large areas where substantial bivouacking occurred in 1997 were denuded, with much of the herbaceous vegetation among the oaks destroyed (D. Steeck, pers. obs. 1997). Vehicle tracks were evident throughout the site (D. Steeck, pers. obs. 1997, 1998) and had been reported by other observers (Painter and Neese 1998). Bivouacking typically occurs in these areas in summer (U.S. Army Reserve Command 1996). Although soils are not as susceptible to compaction at that time, fruiting stalks are destroyed and the loss of vegetation may lead to erosion and consequent loss of existing seeds and bulbs in the soil, as well as an increase in the abundance of nonnative plants. Soil compaction may damage soil mycorrhizae, and the loss of cryptobiotic crusts may hinder seedling establishment of native species (Belnap 1994), thereby intensifying displacement of native species by nonnative grasses. Cryptobiotic crusts have been observed in at least one locality where *Chlorogalum purpureum* var. *purpureum* is found (Painter *in litt.* 1998). Vehicle tracks have also been reported in the third locality of *C. p.* var. *purpureum* at the boundaries of Training Areas 23, 24, and 27 (Painter and Neese 1998, J. Chesnut, *in litt.* 1998). In 1997, the vegetation of this area appeared to be the least affected by training activities, although military training the previous year had caused a spring fire that burned the site and destroyed most of the year's seed crop (Painter and Neese 1998).

The larger site of *Chlorogalum purpureum* var. *reductum*, located on LPNF and on private land, is estimated to occupy less than 8 ha (20 ac) (maps in Borchert 1981, Gaskin 1990; Danielsen pers. comm. 1997). It was likely once continuous, but is now divided by a two-lane highway. The southern portion of the site, on public lands, is further bisected by a dirt road that is currently about 10 m (33 ft) wide and runs the length of the population.

Although this road has existed for many decades, grading during the past 5 years has widened it toward the bounds of the pipe barrier fence that lines it, causing direct loss of some individuals of *C. p.* var. *reductum* and additional habitat loss (D. Magney, pers. comm. 1997). Because the roadbed is graded and highly compacted, the loss of habitat due to the roadbed is relatively permanent, barring extensive restoration efforts. Dust from use of the road during late spring may impede pollination in those plants exposed to it, and dust coating leaves can reduce photosynthetic abilities (Farmer 1993).

In the 1970s and 1980s, most of the LPNF locality of *Chlorogalum purpureum* var. *reductum* was used as a staging area by OHV enthusiasts (McLeod 1987). An active 4-wheel drive route still exists near the population (USFS 1993). A portion of the population was fenced in the early 1980s by the CNPS with help from the USFS to protect it from OHV use. In 1989 or 1990, due to continued OHV use in the area, the USFS installed a pipe barrier on both sides of the dirt road that bisects the population, to exclude vehicles from most of the population. Vehicles repeatedly trespassed onto the site over the past 5 years through broken fences leaving ruts or exposed tracks in the population (K. Danielsen pers. comm. 1996; A. Koch, CDFG, *in litt.* 1997; D. Steeck, pers. obs. 1997). In 1998, the USFS replaced a section of barbed wire fence with a metal post and rewelded broken pipe barriers. Continued monitoring and repairs will be needed to exclude vehicles. In addition to causing injury or death of individual plants, vehicle passes may destroy cryptobiotic soil crusts (Webb and Wilshire 1983), damage soil mycorrhizae, and cause soil compaction, altering the soil's water-holding capacity and interfering with the ability of roots to penetrate the soil (Webb and Wilshire 1983). The existing scars of older vehicle tracks in the population are probably partly the result of soil compaction. Biologists attempting to establish seedlings of *C. p.* var. *reductum* in old OHV tracks in the LPNF population found that only 36 percent of the seeds planted in untreated tracks germinated and survived through their first 1.5 years. Survival was 66 percent for seeds planted in old tracks where the top 10 cm (4 in) of soil was loosened prior to planting to reduce the effects of soil compaction. Bulbs in unloosened soil of old tracks also had a lower survival rate compared to those in loosened soil (Koch 1997). Other tests of germination

response suggest that seeds require burial for post-germination survival and that uncompacted soils containing small fissures and spaces around gravel components are likely essential to successful seedling establishment (D. Wilken, *in litt.* 1998). Little information is available on the portion of this population located on private lands north of the highway.

The second site for *Chlorogalum purpureum* var. *reductum*, located solely on private lands, is reported to be extremely small (less than 0.1 ha (0.25 ac) with several hundred plants), compared to the population managed by the USFS (8 ha). Because this taxon is so narrowly distributed, the degradation of even an acre or two of the occupied habitat in the LPNF population constitutes a significant portion of this taxon's range.

Most localities of *Chlorogalum purpureum* are, or have been, subject to cattle grazing. The negative effects of livestock use on oak savannah habitat, where *C. purpureum* is most likely to occur, includes soil compaction, soil disturbance that enhances the introduction or spread of nonnative aggressive weedy species, direct crushing of the above-ground portion of plants, and diminished seedling establishment from trampling or from destruction of cryptobiotic crusts (Beymer and Klopatek 1991). It has been suggested that light grazing in the habitat of *C. purpureum* var. *reductum* may benefit *C. p.* var. *reductum* by reducing competition from annual grasses (The Nature Conservancy 1987, CDFG 1988). Others have noted, however, that any benefits of cattle use in the area may be more than offset by loss of reproductive structures, damage to seedlings, and habitat damage caused by livestock, since the allotment is in use February through May, a critical season in the life cycle of the purple amole (B. Painter *in litt.* 1998; J. Kuyper, Environmental Defense Center, *in litt.* 1998). Cattle use is likely to negatively affect the habitat of this species to the extent that cattle actually use the portion of the allotment where the population is located. Anecdotal observations in recent years suggest the cattle spend more time in other areas of the allotment where water and more forage is available (M. Fountain, pers. comm. 1998). However, cattle impacts can vary from year-to-year through variation in the grazing, congregating, or trailing patterns of the cattle without an increase in the permitted level of forage utilization in the allotment. If cattle have continued access to the population area, their effect on the population on Federal lands must be monitored; the

allotment should be managed to prevent negative effects to this taxon. Predation by cattle is discussed below under Factor C of this section.

B. Overutilization for commercial, recreational, scientific, or educational purposes.

Overutilization is not currently known to be a factor affecting this species.

C. Disease or predation.

Nearly every locality of *Chlorogalum purpureum* either is or has been subject to cattle grazing. The potential negative effects of livestock grazing (actual herbivory) on *C. purpureum* include the loss of flowers, fruit, and leaves. Cattle have been recorded grazing a substantial portion of the leaves of other, larger, *Chlorogalum* species (Willoughby 1986). Leaves of *C. p. var. purpureum* are more likely than those of *C. p. var. reductum* to be attractive to cattle, as the leaves of the latter are narrow and only a couple of inches long. All three localities of *C. p. var. purpureum* at Fort Hunter Liggett were in grazing allotments prior to 1991. Documented overgrazing occurred from 1963 to 1977 at Fort Hunter Liggett, after which a study of grazing was begun (Stechman 1995). During the grazing study, cattle stocking rates continued to exceed the capacity of the habitats to support them, especially when combined with the drought of the late 1980s and early 1990s (Stechman 1995). No specific information is available on the condition of the localities of *C. p. var. purpureum* during the period of overgrazing, as no basewide surveys for sensitive plant species had been conducted and the status of populations was not tracked. Grazing on Fort Hunter Liggett stopped in 1991, following an extended drought and poor range condition (Stechman 1995), but is scheduled to be resumed in the future, although no date has been set. If the recommendations in the grazing assessment are followed, cattle grazing leases would include most of the extended northern locality of this taxon and all of the second locality in Training Area 25. Only the southernmost locality, at the boundaries of Training Areas 23, 24, and 27, would be completely excluded from cattle use (Stechman 1995).

Chlorogalum purpureum var. *reductum* is within an active grazing allotment on the LPNF that cattle use from February through May (USFS 1997). The permitted level of use of the allotment by livestock is moderate (USFS 1997). In 1986 livestock use became a problem when cattle congregated within the population behind a fence built to block vehicle

access (The Nature Conservancy 1987). A pipe barrier with low sections was later installed to permit cattle movement over the barriers. Because the period of cattle use coincides with growth and flowering of *C. p. var. reductum*, it is likely that reproduction would be negatively affected if cattle congregated on the plateau within the locality containing the population. In 1995 and 1996, cattle appeared to have spent little time on the plateau (A. Koch, pers. comm. 1997a). In 1997, fecal evidence suggested that cattle spent relatively more time within the site (D. Steeck, pers. obs. 1997; A. Koch, pers. comm. 1997b). Although current monitoring data are insufficient to evaluate the use of the allotment on *C. p. var. reductum*, grazing has the potential to negatively affect reproduction and survival (through loss of inflorescences and photosynthetic tissue), and may exacerbate damage already caused by vehicles or other human activities. We consider the inclusion of the population in an active grazing allotment a potential threat that should be assessed.

D. The inadequacy of existing regulatory mechanisms.

Pursuant to the Native Plant Protection Act (Div. 2, chapter 10 sec. 1900 *et seq.* of the California Department of Fish and Game Code) and the California Endangered Species Act (Div. 3, chapter 1.5 sec. 2050 *et seq.*), the California Fish and Game Commission listed *Chlorogalum purpureum* var. *reductum* as rare in 1978. California Senate Bill 879, passed in 1997 and effective January 1, 1998, requires individuals to obtain a section 2081(b) permit from CDFG to take a listed species incidental to otherwise lawful activities, and requires that all impacts be fully mitigated and all measures be capable of successful implementation. As applied to State-listed plant species, however, these requirements have not been tested; their effectiveness cannot be evaluated for several years.

Chlorogalum purpureum var. *reductum* occurs primarily on Federal lands managed by the LPNF and on private lands. State listing provides no consultation or other requirements for protection on Federal lands, although it is USFS policy to work with the State in the conservation of such taxa. The management of sensitive resources on the LPNF is guided by various policies and regulations, including the National Environmental Policy Act (NEPA) of 1969 (Pub. L. 91-109, 42 U.S.C. 4321-4347, 83 Stat. 852), National Forest Management Act (16 U.S.C. 1600 *et seq.*), and the Land and Resource

Management Plan for the Los Padres National Forest (USFS 1988).

The NEPA requires that the USFS disclose and consider potential environmental impacts of a proposed project. Under new regulations, 10-year grazing permits are subject to the NEPA process, and the NEPA process is under way for the grazing allotment where *Chlorogalum purpureum* var. *reductum* occurs (USFS 1997). Although NEPA requires disclosure of potential effects of Federal actions and allows for comment by agencies and the public, it does not, of itself, provide additional protection.

The Land and Resource Management Plan for LPNF (USFS 1988) directs the USFS to ensure the viability of sensitive plant species and to emphasize the improvement and protection of habitat for sensitive species in their management activities. These regulations appear to be adequate, but their implementation by the USFS has not been consistent. Unless the barriers around portions of the population are regularly monitored and maintained, illegal trespass by vehicles into the habitat of *Chlorogalum purpureum* var. *reductum* is likely to continue. To date, the USFS has not adequately monitored vehicle trespass, repaired fencing, bolstered barriers in a timely manner, or adequately evaluated the effects of permitted livestock use on the population on LPNF (D. Steeck, pers. obs. 1998).

Chlorogalum purpureum var. *purpureum* occurs solely on Federal lands managed by Fort Hunter Liggett. The Department of Defense has various policies and directives to guide the management of sensitive natural resources. Army Regulation 200-3 provides for environmental review of projects that might affect sensitive and listed species. Fort Hunter Liggett has had an environmental review process since 1994, and *C. p. var. purpureum* is included in this process. According to the Army at Fort Hunter Liggett (D. Hines *in litt.* 1998), all projects are modified to reduce impacts to this taxon if impacts are predicted to occur. For example, a planned bayonet course was relocated to avoid placing it within or directly adjacent to patches of *C. p. var. purpureum*. In other cases, such as with the recent construction of the obstacle course and parking areas in occupied habitat, project modifications have been insufficient, and projects continue to be sited in occupied habitat and continue to affect this taxon. In addition, environmental review only occurs for projects that require excavation; bivouacking and vehicle impacts are not covered by this process. The environmental review process does not

always allow for assessment surveys to be conducted at the time of year when the plant can be identified (H. Hormann, *in litt.* 1997). For example, surveys for the proposed bayonet course occurred in late summer 1997, when the above-ground portions of the plants were dry and difficult to locate.

Under Army Regulation 200-3, a Species Management Plan for *Chlorogalum purpureum* var. *purpureum* and other sensitive species on the base has been developed (Hazebrook and Clark 1997). While some of the goals will benefit *C. p.* var. *purpureum* if achieved, the actual protection the plan affords is minimal and based primarily on avoiding impacts to populations "when feasible." To date, no areas where *C. p.* var. *purpureum* occurs on the base are off-limits to training. We conclude that Army directives, while improving the consideration that this taxon receives on the base, have not yet altered activities to sufficiently reduce the threats posed by military activities.

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

Other factors affecting individuals of *Chlorogalum purpureum* var. *purpureum* include military training, changes in fire frequency, and the invasion of this taxon's habitat by nonnative plant species. Training activities that involve trampling, camping, or driving through occupied habitat can directly crush flowers, fruits, and vegetative parts of *C. p.* var. *purpureum* and result in diminished reproductive success, lower seedling establishment, and reduced plant vigor. At Fort Hunter Liggett, training activities increase in the spring, around April, and peak in the summer (U.S. Dept. of Army 1997), a period that coincides with flowering and fruiting of the taxon. Military field training activities can reduce seedling establishment by direct crushing and by altering soil bulk density and water-holding capacity. Training activities lead to soil compaction and soil disturbance, which also encourages the invasion of weedy, nonnative plant species that may compete directly with *C. p.* var. *purpureum*. Habitat alterations due to training activities are further discussed under Factor A.

The oak savannah and grassland habitats in which *Chlorogalum purpureum* occurs have been invaded by nonnative annual plants such as wild oats (*Avena* sp.), soft chess (*Bromus hordeaceus*), red brome (*Bromus madritensis* var. *rubens*), schismus (*Schismus barbatus*), and filaree (*Erodium* sp.) (Borchert 1981; Magney 1988; Painter and Neese 1998). Hoover

(1970) noted that *C. p.* var. *reductum* grew higher under oaks where the soil was looser with greater humus content; others have noted since then that *C. p.* var. *reductum* is not found where annual nonnative grasses are dense (Borchert 1981, Painter *in litt.* 1998), which tends to be under oaks at the site on USFS land (D. Steeck, pers. obs. 1998). It may be that *C. p.* var. *reductum* has been displaced by nonnative grasses in these areas, restricting *C. p.* var. *reductum* to the patches of gravelly soils where nonnative grasses are stunted or sparse. Increasing invasion by nonnative annual grasses has been implicated in loss of habitat for other rare geophytes (e.g., Rosentreter 1994). Cryptobiotic crusts that form on the soil surface have been shown to enhance seedling establishment in some native taxa (Belnap 1994), and the displacement of crusts may enhance invasion by nonnative species. These soil crusts are found in at least some populations of *C. purpureum* (Painter and Neese 1998; B. Painter *in litt.* 1998). Scraping or other activity that disturbs the soil surface has been noted in one instance at Fort Hunter Liggett to result in at least temporary high abundance of nonnative annual grasses (Painter and Neese 1998). The rapid, dense growth of nonnative annual grasses may also act as an abundant, rapidly replenished fuel source leading to more frequent range fires as has been documented in other areas (Wright 1985) or the need for more frequent prescribed burns to reduce the potential of uncontrolled range fires (J. Chesnut, consulting biologist, *in litt.* 1998).

Burning too frequently or during seasons of growth and reproduction may threaten *Chlorogalum purpureum* var. *purpureum* at Fort Hunter Liggett. A spring burn swept through the southernmost locality on Fort Hunter Liggett in 1995. Botanists conducting a post-fire survey reported that all observed fruiting inflorescences were either damaged or destroyed, and they concluded that the seed crop was mostly, if not completely, destroyed (Painter and Neese 1998). The fire occurred in May, rather than summer or early fall, when most seeds would have been dispersed (Painter and Neese 1998). Burning too frequently may damage a population due to the slow growth rate of seedlings. Estimates of time needed for *C. purpureum* to reach reproductive maturity in the wild range from 5 to 15 years (Judy Jernstedt, University of California at Davis, *in litt.* 1998; M. Elvin, pers. comm. 1998). In addition, immature plants with small bulbs located near the soil surface may

be particularly vulnerable to fires. The fire did appear to stimulate an increase in the number of plants flowering the following year (Painter and Neese 1998).

In developing this final rule, we have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species. Based on this evaluation, the preferred action is to list the species as threatened. This species is particularly vulnerable due to the restricted range it occupies. Threats to the species are vehicle trespass on USFS lands, military activities due to the species' location in active training areas and in the housing and administration area of an Army base, road use and maintenance, displacement by nonnative plant species, and livestock grazing. Because the Army's environmental directives are increasing the consideration afforded to this and other rare plant species on Fort Hunter Liggett and because the USFS has implemented some management actions for this species, we determine that threatened status is currently appropriate. The species is not currently in danger of extinction, but is likely to become so if substantial use of its habitat for military training activities continues and if OHV activities or livestock impacts increase in the population area on USFS lands.

Critical Habitat

Critical habitat is defined in section 3 of the Act as: (i) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management considerations or protection and; (ii) specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. "Conservation" means the use of all methods and procedures needed to bring the species to the point at which listing under the Act is no longer necessary.

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12) require that, to the maximum extent prudent and determinable, we designate critical habitat at the time the species is determined to be endangered or threatened. Our regulations (50 CFR 424.12(a)(1)) state that the designation of critical habitat is not prudent when one or both of the following situations exist—(1) the species is threatened by taking or other human activity, and

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

The Final Listing Priority Guidance for FY 2000 (64 FR 57114) states, the processing of critical habitat determinations (prudence and determinability decisions) and proposed or final designations of critical habitat will no longer be subject to prioritization under the Listing Priority Guidance. Critical habitat determinations, which were previously included in final listing rules published in the **Federal Register**, may now be processed separately, in which case stand-alone critical habitat determinations will be published as notices in the **Federal Register**. We will undertake critical habitat determinations and designations during FY 2000 as allowed by our funding allocation for that year. As explained in detail in the Listing Priority Guidance, our listing budget is currently insufficient to allow us to immediately complete all of the listing actions required by the Act. Deferral of the critical habitat designation for *Chlorogalum purpureum* will allow us to concentrate our limited resources on higher priority critical habitat and other listing actions, while allowing us to put in place protections needed for the conservation of *Chlorogalum purpureum* without further delay.

We propose that critical habitat is prudent for *Chlorogalum purpureum*. In the last few years, a series of court decisions have overturned Service determinations regarding a variety of species that designation of critical habitat would not be prudent (*e.g.*, *Natural Resources Defense Council v. U.S. Department of the Interior* 113 F. 3d 1121 (9th Cir. 1997); *Conservation Council for Hawaii v. Babbitt*, 2 F. Supp. 2d 1280 (D. Hawaii 1998)). Based on the standards applied in those judicial opinions, we believe that designation of critical habitat would be prudent for *Chlorogalum purpureum*.

In the absence of a finding that critical habitat would increase threats to a species, if there are any benefits to critical habitat designation, then a prudent finding is warranted. In the case of this species, there may be some benefits to designation of critical habitat. The primary regulatory effect of critical habitat is the section 7 requirement that Federal agencies refrain from taking any action that destroys or adversely modifies critical habitat. While a critical habitat designation for habitat currently occupied by this species would not be

likely to change the section 7 consultation outcome because an action that destroys or adversely modifies such critical habitat would also be likely to result in jeopardy to the species, there may be instances where section 7 consultation would be triggered only if critical habitat is designated. Examples could include unoccupied habitat or occupied habitat that may become unoccupied in the future. There may also be some educational or informational benefits to designating critical habitat. Therefore, we find that critical habitat is prudent for *Chlorogalum purpureum*.

We plan to employ a priority system for deciding which outstanding critical habitat designations should be addressed first. We will focus our efforts on those designations that will provide the most conservation benefit, taking into consideration the efficacy of critical habitat designation in addressing the threats to the species, and the magnitude and immediacy of those threats. We will develop a proposal to designate critical habitat for the *Chlorogalum purpureum* as soon as feasible, considering our workload priorities.

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 local agencies, private organizations, and individuals. The Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. The protection required of Federal agencies and the prohibitions against certain activities involving listed plants are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) requires Federal agencies to confer with us on any action that is likely to jeopardize the continued existence of a species proposed for listing or result in destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, section 7(a)(2) requires

Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or destroy or adversely modify its critical habitat, if any is designated. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with us.

Although this final rule lists *Chlorogalum purpureum* at the specific level, we intend through the recovery planning process to designate each of the varieties as a separate recovery unit for purposes of section 7 consultation and the recovery process. In other words, the jeopardy standard would be applied to either *C. p.* var. *purpureum* or *C. p.* var. *reductum* as separately identified recovery units, in accordance with our Endangered Species Consultation Handbook.

Federal agencies that may affect the species proposed in this rule through activities they fund, authorize, or carry out are the USFS (at Los Padres National Forest), the Department of the Army (at Fort Hunter Liggett) and, to a much smaller extent, the Federal Highway Administration through funds provided for State highway construction or maintenance.

Chlorogalum purpureum var. *purpureum* occurs wholly on Federal lands managed by the Department of the Army. Activities the Army funds, authorizes, or carries out that could affect this taxon include, but are not limited to, construction and use of training facilities, field training exercises, road construction and maintenance, prescribed burning, fire suppression activities, livestock grazing, and hunting.

Chlorogalum purpureum var. *reductum* occurs primarily on public lands managed by the USFS on Los Padres National Forest. Activities that the USFS funds, authorizes, or carries out that could affect this taxon include livestock grazing, OHV activities, road maintenance, fire suppression activities, and special use permits authorizing use and the development of management plans for special use areas.

Listing *Chlorogalum purpureum* as threatened will provide for the development of a recovery plan. The plan will bring together Federal, State, and local efforts for the plant's conservation, establishing a framework for cooperation and coordination. The plan will set recovery priorities and describe site-specific management actions necessary to achieve the conservation of the species. Additionally, pursuant to section 6 of the Act, we will be more likely to grant

Dated: March 14, 2000.

Jamie Rappaport Clark,

Director, Fish and Wildlife Service.

[FR Doc. 00-6836 Filed 3-15-00; 4:31 pm]

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018-AE81

Endangered and Threatened Wildlife and Plants; Final Rule for Endangered Status for Four Plants From South Central Coastal California

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), have determined endangered status for *Cirsium loncholepis* (La Graciosa thistle), *Eriodictyon capitatum* (Lompoc yerba santa), *Hemizonia increscens* ssp. *villosa* (Gaviota tarplant), and *Lupinus nipomensis* (Nipomo Mesa lupine), pursuant to the Endangered Species Act (Act) of 1973, as amended. These plants are in danger of extinction because their habitats have been significantly reduced over time by residential, commercial, agricultural, and oil and gas development. Their remaining habitats have been adversely affected by development, military activities, alteration of natural fire cycles, and the invasion of nonnative plant species. The limited distribution and small population sizes of these four species also make them more vulnerable to extinction from naturally occurring catastrophic events. Existing regulations do not provide adequate protection to prevent further losses from ongoing activities. This rule will extend the Act's protection to these plants.

EFFECTIVE DATE: This rule is effective April 19, 2000.

ADDRESSES: The complete file for this rule is available for inspection, by appointment, during normal business hours at the Ventura Fish and Wildlife Office, U.S. Fish and Wildlife Service, 2493 Portola Road, Suite B, Ventura, California 93003.

FOR FURTHER INFORMATION CONTACT: Tim Thomas, Botanist, at the above address (telephone 805/644-1766; facsimile 805/644-3958).

SUPPLEMENTARY INFORMATION:

Background

Cirsium loncholepis (La Graciosa thistle), *Eriodictyon capitatum* (Lompoc

yerba santa), *Hemizonia increscens* ssp. *villosa* (Gaviota tarplant), and *Lupinus nipomensis* (Nipomo Mesa lupine) occur along the south central California coast. They are restricted to a narrow area in northern and western Santa Barbara County, southern San Luis Obispo County, and southern Monterey County.

These species occur in sensitive, declining or altered habitats including central dune scrub, central maritime chaparral, valley needlegrass grassland, coastal freshwater wetlands, and southern bishop pine forest (Holland 1986; Schoenherr 1992). Two of these habitats, central dune scrub and coastal freshwater wetlands, are notable for their geological and biological value. The largest coastal dune system in California, the Guadalupe Dune region, is located in southern San Luis Obispo County near Guadalupe, where approximately 47 square kilometers (sq km) (18 sq miles (mi)) of active dunes create a series of back dune lakes. The Department of the Interior added the Guadalupe Dune region to the National Natural Landmark system in 1980, recognizing the biological and physical diversity of the area (Schoenherr 1992).

Lupinus nipomensis is wholly restricted to these dunes. *Cirsium loncholepis* is also restricted to these dunes with the exception of a small disjunct population in southern Monterey County (California Natural Diversity Data Base (CNDDDB) 1998). The coastal dune habitats are highly disturbed, and all habitat remnants have been invaded by nonnative plant species. Invasive weeds such as *Ehrharta calycina* (veldt grass), *Ammophila arenaria* (European beach grass), *Carpobrotus edulis* (iceplant), and *Mesembryanthemum crystallinum* (crystalline iceplant) are serious threats to the natural ecological processes of coastal sandy habitats and to the viability of *L. nipomensis* and *C. loncholepis* (Smith 1976; Zedler and Scheid 1988; Schoenherr 1992).

Inland from the active dunes, remnants of prehistoric uplifted dunes have formed a weakly cemented sandstone that has weathered to produce a sandy, extremely well drained, and nearly infertile soil (Davis *et al.* 1988). This substrate has a limited distribution, occurring on the following mesas in the area: Nipomo Mesa, Casmalia Hills, San Antonio Terrace, Burton Mesa, Lompoc Terrace, and Purisima Hills. The habitat that occurs on these sand hills has been called the central coast maritime chaparral and has been the focus of several studies (Ferren *et al.* 1984; Davis *et al.* 1988; Philbrick and Odion 1988; Davis *et al.* 1989;

Odion *et al.* 1992). Two of the locations of *Eriodictyon capitatum* occur in maritime chaparral. Seven local endemic plant species, and at least 16 other uncommon plant species, are also components of this habitat. This community type is an exceptional biological resource due to the concentration of rare plants found within it, but most of it has been converted to other land uses or degraded by weed invasion and habitat fragmentation (Davis *et al.* 1988; Odion *et al.* 1992). Central coast maritime chaparral is considered threatened and sensitive by the California Department of Fish and Game's (CDFG) Natural Heritage Division (Holland 1986). Southern bishop pine (*Pinus muricata*) forest is scattered in the Purisima Hills and intergrades with the central coast maritime chaparral (Holland 1986).

Hemizonia increscens ssp. *villosa* is associated with the rare needlegrass grasslands, composed of native purple needlegrass (*Nassella* spp.). The habitat intergrades with coastal sage scrub made up of *Artemisia californica* (California sagebrush), *Baccharis pilularis* (coyote bush), and *Hazardia squarrosa* (sawtooth golden bush).

Discussion of the Four Species

Cirsium loncholepis

Cirsium loncholepis (La Graciosa thistle) was collected by Eastwood in 1906 near the village site of La Graciosa (razed in 1877 and the current site of Orcutt) in San Luis Obispo County (Smith 1976). *Cirsium loncholepis* is a short-lived (1 to 2 years), spreading, mound-like or erect, and often fleshy, spiny member of the sunflower family (Asteraceae). Plants are from 1 to 10 decimeters (dm) (4 to 40 inches (in.)) in height, with one to several stems. The leaves are wavy-margined. The lower leaves are 10 to 30 centimeters (cm) (4 to 12 in.) long with spiny petioles and usually deeply lobed with secondary lobes or teeth. The leaf base of the middle and upper leaves forms short, spiny wings along the petiole. The flower heads are in tight clusters at the tips of the stems. Flowering heads are 2 to 4 cm (0.8 to 1.6 in.) wide. The corollas are 25 to 30 millimeters (mm) (1 to 1.2 in.) long and more or less white with a purplish tube containing purple anthers. This species closely resembles *Cirsium brevistylum* (Indian thistle), a taller plant with the upper portion covered with cobwebby hairs. The leaves of *C. brevistylum* are shallowly lobed, whereas the leaves of *C. loncholepis* are deeply lobed with secondary lobes (Keil and Turner 1993).