Replies to an opposition must be filed on or before March 24, 2014.

ADDRESSES: Federal Communications Commission, 445 12th Street SW., Washington, DC 20554.

FOR FURTHER INFORMATION CONTACT: Andrew J. Rhodes, 202–418–2700.

SUPPLEMENTARY INFORMATION: This is a summary of Commission's document, Report No. 2994, released December 19, 2013. The full text of Report No. 2994 is available for viewing and copying in Room CY–B402, 445 12th Street SW., Washington, DC or may be purchased from the Commission's copy contractor, Best Copy and Printing, Inc. (BCPI) (1–800–378–3160).

Subject: In the Matter of Amendment of Section 73.202(b), Table of Allotments, FM Broadcast Stations (Caseville and Pigeon, Michigan) (MM Docket No. 01–229).

In the Matter of Amendment of Section 73.202(b), Table of Allotments, FM Broadcast Stations (Harbor Beach and Lexington, Michigan) (MM Docket No. 01–231).

Number of Petitions Filed: 1.

Federal Communications Commission.

Marlene H. Dortch,

Secretary, Office of the Secretary, Office of Managing Director.

[FR Doc. 2014–04325 Filed 2–26–14; 8:45 am]

BILLING CODE 6712–01–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R8–ES–2013–0131; FXES11130900000–145–FF09E42000]

RIN 1018–AW04

Endangered and Threatened Wildlife and Plants; Removing Oenothera avita ssp. eurekensis and Swallenia alexandrae From the Federal List of Endangered and Threatened Plants

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule and 12-month petition finding.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), propose to remove *Oenothera avita* ssp. *eurekensis* (now accepted as *Oenothera californica* subsp. *eurekensis,* with a common name of Eureka Valley evening-primrose, Eureka evening-primrose, or Eureka Dunes evening-primrose) and *Swallenia alexandrae* (with a common name of Eureka dune grass or Eureka Valley dune grass) from the Federal List of Endangered and Threatened Plants. This action is based on a review of the best available scientific and commercial information, which indicates that both species no longer meet the definition of an endangered species, and further do not meet the definition of a threatened species, under the Endangered Species Act of 1973, as amended (Act). This proposed rule, if made final, would remove these plants from the List of Endangered and Threatened Plants. This document also constitutes our 12-month finding on a petition to remove both species from the List of Endangered and Threatened Plants. We are seeking information and comments from the public regarding this proposed rule.

DATES: We will accept comments received or postmarked on or before April 28, 2014. We must receive requests for public hearings, in writing, at the address shown in the **FOR FURTHER INFORMATION CONTACT** section by April 14, 2014.

ADDRESSES: *Comment submission:* You may submit comments by one of the following methods:

(1) *Electronically:* Go to the Federal eRulemaking Portal: *http://www.regulations.gov.* In the Search box, enter Docket No. FWS–R8–ES–2013–0131, which is the docket number for this rulemaking. Then, in the Search panel on the left side of the screen, under the Document Type heading, click on the Proposed Rules link to locate this document. You may submit a comment by clicking on ''Comment Now!''

(2) *By hard copy:* Submit by U.S. mail or hand-delivery to: Public Comments Processing, Attn: FWS–R8–ES–2013–0131; Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, MS 2042–PDM; Arlington, VA 22203.

We request that you send comments only by the methods described above. We will post all comments on *http://www.regulations.gov.* This generally means that we will post any personal information you provide us (see the Information Requested section below for more information).

Document availability: You may obtain copies of the proposed rule and related documents (including a copy of the Background Information document (Service 2014, entire) referenced throughout this proposed rule) at *http://www.regulations.gov* under Docket No. FWS–R8–ES–2013–0131, or at the Ventura Fish and Wildlife Office's Web site at *http://www.fws.gov/ventura/.*

FOR FURTHER INFORMATION CONTACT: Stephen P. Henry, Deputy Field Supervisor, Ventura Fish and Wildlife Office, 2493 Portola Road, Suite B, Ventura, CA 93003; telephone 805–644–1766; facsimile 805–644–3958. If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Executive Summary

Species addressed. Oenothera avita ssp. *eurekensis* (now accepted as *Oenothera californica* subsp. *eurekensis;* Eureka Valley evening-primrose) and *Swallenia alexandrae* (Eureka dune grass) are endemic to three dune systems in the Eureka Valley, Inyo County, California. Eureka Valley falls within federally designated wilderness within Death Valley National Park, and is managed accordingly by the National Park Service (Park Service).

Purpose of the Regulatory Action. This document constitutes our 12-month finding in response to a petition to delist Eureka Valley evening-primrose and Eureka dune grass, and we are proposing to remove both plants from the Federal List of Endangered and Threatened Plants.

Basis for the Regulatory Action. Under the Endangered Species Act of 1973, we may be petitioned to list, delist, or reclassify a species. Under the Act, a species may be determined to be an endangered species or threatened species because of any of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) Overutilization for commercial, recreational, scientific, or educational purposes; (C) Disease or predation; (D) The inadequacy of existing regulatory mechanisms; or (E) Other natural or manmade factors affecting its continued existence. We must consider the same factors in delisting a species. We may delist a species if the best scientific and commercial data indicate the species is neither threatened nor endangered for one or more of the following reasons: (1) The species is extinct, (2) The species has recovered and is no longer endangered or threatened, or (3) The original scientific data used at the time the species was classified were in error.

The primary threat to Eureka Valley evening-primrose and Eureka dune grass at the time of listing was off-highway vehicle (OHV) activity at Eureka Dunes (43 FR 17910; April 26, 1978); although not specifically stated in the final listing rule, this also presumes a lesser degree of impacts from camping that were associated with OHV activity on and around the dunes. Habitat protections and ongoing management by the Bureau of Land Management (BLM; up until

1994) and Park Service (since 1994) since listing have resulted in amelioration of the threats identified at listing. Of the remaining potential impacts, which consist of herbivory, seed predation, stochastic events, climate change, and (specifically for Eureka Valley evening-primrose) competition with Russian thistle, one or more may be causing stress to a population (or portions of a population) of either species. However, the stress caused by those potential impacts are not of sufficient imminence, intensity, or magnitude to rise to the level that they would cause either Eureka Valley evening-primrose or Eureka dune grass to be a threatened species (i.e., likely to become an endangered species within the foreseeable future).

Information Requested

We intend any final action resulting from this proposal will be based on the best scientific and commercial information available, and be as accurate and as effective as possible. Therefore, we request comments or information from other governmental agencies, tribes, the scientific community, industry, or other interested parties concerning this proposed rule. We particularly seek comments concerning:

(1) Reasons why we should or should not delist Eureka Valley evening-primrose and Eureka dune grass under the Act (16 U.S.C. 1531 *et seq.*).

(2) New biological or other relevant data concerning any threat (or lack thereof) to these plants.

(3) New information concerning the range, distribution, and population size of both Eureka Valley evening-primrose and Eureka dune grass. Additionally, we are seeking information to aid in determining trends for both species, particularly in light of varying methodologies employed since listing (e.g., transects, photopoints, grid systems), the need to extrapolate anticipated future rangewide trends, and the need to utilize the best methodologies possible for future monitoring, including post-delisting monitoring.

(4) New information on the effects of other potential threat factors, including changes in the distribution and abundance of populations, disease, predation by small mammals, or negative effects resulting from the presence of invasive, nonnative species (particularly *Salsola* spp. (Russian thistle)).

(5) New information and data on the current or planned activities within the ranges of Eureka Valley evening-primrose and Eureka dune grass that may adversely affect or benefit the plants.

(6) New information or data on the projected and reasonably likely impacts to Eureka Valley evening-primrose and Eureka dune grass associated with climate change.

(7) What should be included in a post-delisting monitoring plan for the species, including length of monitoring period, monitoring intervals, what monitoring techniques are appropriate, triggers and thresholds for additional monitoring or initiating status reviews, and so forth.

Please include sufficient information with your submission (such as scientific journal articles or other publications) to allow us to verify any scientific or commercial information you include. Please note that submissions merely stating support for or opposition to the action under consideration without providing supporting information, although noted, will not be considered in making a determination, as section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an endangered or threatened species must be made ''solely on the basis of the best scientific and commercial data available.''

You may submit your comments and materials concerning this proposed rule by one of the methods listed in the **ADDRESSES** section. We request that you send comments only by the methods described in the **ADDRESSES** section. If you submit information via *http://www.regulations.gov,* your entire submission—including any personal identifying information—will be posted on the Web site. If your submission is made via a hardcopy that includes personal identifying information, you may request at the top of your document that we withhold this information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on *http://www.regulations.gov.*

Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on *http://www.regulations.gov,* or by appointment, during normal business hours, at the U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

Public Hearings

Section 4(b)(5) of the Act provides for one or more public hearings on this proposal, if requested. Requests must be received no later than April 14, 2014. Send your request to the address shown in **FOR FURTHER INFORMATION CONTACT**. We will schedule public hearings on this proposal, if any are requested, and announce the dates, times, and places of those hearings, as well as how to obtain reasonable accommodations, in the **Federal Register** and local newspapers at least 15 days before the hearing.

Peer Review

In accordance with our joint policy on peer review published in the **Federal Register** on July 1, 1994 (59 FR 34270), we will seek the expert opinions of at least three appropriate and independent specialists regarding this proposed rule. A discussion of additional information related to this proposed rule—including (but not limited to) information on life history, taxonomy, genetics, seed bank ecology, survivorship and demography, rangewide distribution, and abundance surveys—is presented in the Background Information document (Service 2014) available at *http://www.regulations.gov* (Docket No. FWS–R8–ES–2013–0131). The purpose of peer review is to ensure that decisions are based on scientifically sound data, assumptions, and analyses. The peer reviewers will conduct assessments of the proposed rule, and the specific assumptions and conclusions regarding the proposed delisting. These assessments will be completed during the public comment period.

We will consider all comments and information we receive during the comment period on this proposed rule as we prepare the final determination. Accordingly, the final decision may differ from this proposal.

Previous Federal Actions

Consideration of Federal protection for Eureka Valley evening-primrose and Eureka dune grass began when the Secretary of the Smithsonian Institution, as directed by section 12 of the Act, prepared a report on native 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 Eureka Valley evening-primrose and Eureka dune grass as endangered. On July 1, 1975, we published a notice in the **Federal Register** (40 FR 27823) accepting the report as a petition within the context of section 4(c)(2) (now section 4(b)(3)) of the Act and of our intention to review the status of the plant taxa (groups of distinct populations considered separate from other such groups, such as species and subspecies) 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 taxa, including Eureka Valley evening-primrose and Eureka dune grass, to be endangered species pursuant to section 4 of the Act. On April 26, 1978, we published a final rule to list 11 plant taxa as endangered, including Eureka Valley evening-primrose and Eureka dune grass, and 2 plant taxa as threatened (43 FR 17910); critical habitat was not designated.

On July 7, 2005, we published a notice indicating our intent to initiate 5-year status reviews for 31 species, including Eureka Valley evening-primrose and Eureka dune grass (70 FR 39327), and requested that the public provide us information within 60 days. On November 3, 2005, we published a notice extending the comment period to January 3, 2006 (70 FR 66842). We did not receive any information from the public regarding Eureka Valley evening-primrose or Eureka dune grass during either comment period. Five-year reviews were completed for both taxa on September 24, 2007 (Service 2007a, b). Based on the best available information at that time, we concluded that both taxa no longer met the definition of an endangered species, and further do not meet the definition of a threatened species, under the Act, and we recommended their removal from the List of Endangered and Threatened Plants.

On May 18, 2010, we received a petition dated May 13, 2010, from the Pacific Legal Foundation requesting that the Service delist Eureka Valley evening-primrose and Eureka dune grass. The petition was based on the analysis and recommendations contained in our 2007 5-year status reviews for these taxa. On January 19, 2011, we published a 90-day finding (76 FR 3069) in which we concluded that the petition and information in our files provided substantial information indicating that delisting may be warranted, announced that we were initiating status reviews for these taxa, and requested scientific and commercial data and other information regarding these taxa from governmental agencies, Native American Tribes, the scientific community, industry, and any other interested parties. We received one letter from the public that provided additional information relevant to Eureka dune grass (Bell 2011).

On March 27, 2013, the Pacific Legal Foundation filed a lawsuit challenging our failure to issue the required 12-month findings in response to their petition. Pursuant to a settlement agreement approved by the court on August 5, 2013, and revised by a court order on December 19, 2013, we must deliver 12-month findings for the Eureka Valley evening-primrose and Eureka dune grass to the **Federal Register** by February 21, 2014.

This document constitutes our 12-month finding on the petition to delist Eureka Valley evening-primrose and Eureka dune grass, and we are proposing to delist the two taxa, which would remove them from the List of Endangered and Threatened Plants.

Background

For this proposal, we conducted a scientific analysis as presented in this document and supplemented with additional information presented in the Background Information document (Service 2014, entire; available at *http://www.regulations.gov*, Docket No. FWS–R8–ES–2013–0131). The Background Information document was prepared by Service biologists to provide additional discussion of the environmental setting for the Eureka Valley, and other background information of Eureka Valley evening-primrose's and Eureka dune grass's life history, taxonomy, genetics, seed bank ecology, survivorship and demography, rangewide distribution, and abundance surveys, as well as additional information on the threats that may be impacting both species.

Eureka Valley evening-primrose and Eureka dune grass are endemic (unique to a geographic area) to the sand dunes of Eureka Valley (Figure 1), which occurs within Death Valley National Park, Inyo County, California. Three dune systems occur in Eureka Valley and are located between the Last Chance Mountains to the east, the Saline Mountains to the south, and the Inyo Mountains to the west and north (Rowlands 1982, p. 2). The Eureka Dunes parallel the Last Chance Mountains (Service 1982, p. 12) and are the largest of the three dunes, covering a total area of about 2,003 acres (ac) (811 hectares (ha)) (Service 2013a based on Shovik 2010). The Saline Spur and Marble Canyon Dunes, two smaller dune systems, cover an area of about 238 ac (96 ha) and 610 ac (247 ha), respectively (Service 2013a based on Shovik 2010). Saline Spur Dunes and Marble Canyon Dunes, including a southern extension of Marble Canyon Dunes known as the unnamed site, are located approximately 4 miles (mi) (6.4 kilometers (km)) and 9 mi (14.4 km) west of Eureka Dunes (Bagley 1986, p. 4). The southern extension of Marble Canyon Dunes (the unnamed site) was previously treated as a separate dune system, but we refer to this area and the rest of the dune system as the Marble Canyon Dunes. See additional discussion in Service 2014 (pp. 4–7).

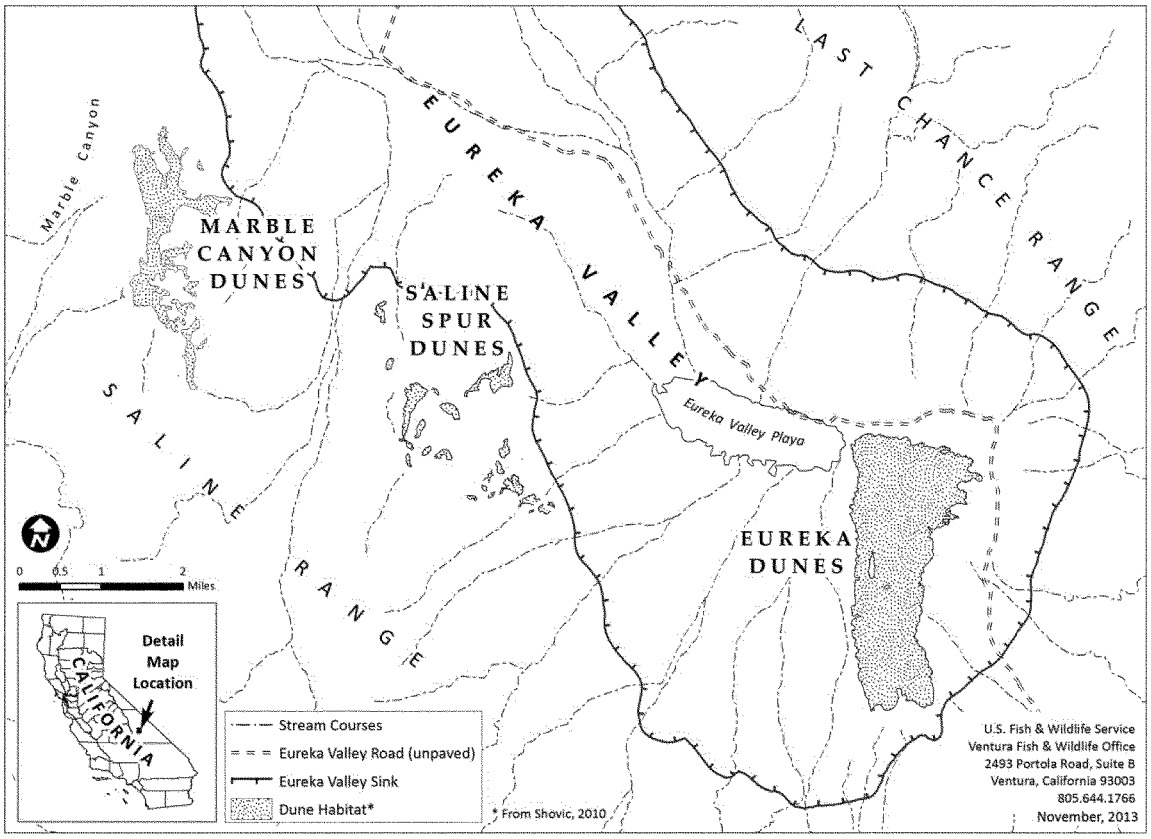

FIGURE 1—Sand dune systems of Eureka Valley, which are comprised of Eureka, Saline Spur, and Marble Canyon Dunes, Inyo County, California.

Eureka Valley Evening-Primrose

Species Description, Taxonomy, and Life History

Eureka Valley evening-primrose is a short-lived perennial in the evening-primrose family (Onagraceae). It forms rosettes for the first 1 or 2 years, then develops decumbent or ascending stems up to 8 decimeters (31.5 inches (in)) high. Plants produce clusters of white fading-to-pink flowers, which continue to be produced as long as conditions are favorable.

The taxon was listed as *Oenothera avita* (W.M. Klein) W.M. Klein subsp. *eurekensis* (Munz and J.C. Roos) W.M. Klein (Klein 1965, p. 116). However, since that time, the accepted scientific name (Wagner 1993, p. 803; Wagner 2002, p. 395; Wagner *et al.* 2007, p. 180; Wagner 2012, p. 952; CNPS 2013) has been and will be treated in this document as *O. californica* subsp. *eurekensis,* and referred to as Eureka Valley evening-primrose throughout the remainder of this document.

The plant spends most of the year as a small rosette of leaves (Pavlik 1979a, pp. 47–49, 52; 1979b, pp. 87–88). In April and May, plants undergo rapid stem elongation and bloom between April and July. Under optimal conditions, recruits (first-year plants) can bloom in the year in which they germinate (Pavlik 1979a, p. 66). In general, evening-primrose species are pollinated by hawkmoths, butterflies, and bees (Gregory 1963, pp. 387, 398, 403, 407; Moldenke 1976, pp. 322, 346, 358). Following the blooming period, the elongated stems die back and are buried by shifting sands. Plants sometimes bloom again in the fall with additional summer or fall rains (Pavlik 1979a, p. 53; 1979b, p. 89). Eureka Valley evening-primrose also has the ability to reproduce clonally (produce new individuals through vegetative growth rather than by seed), which provides a vegetative means for reproduction (Pavlik 1979a, p. 68; Pavlik and Barbour 1986, p. 84; Pavlik and Barbour 1988, p. 240).

Abundance and timing of rainfall appear to be important not only for germination, but for successful recruitment of individuals into the population; sufficient rainfall for germination in the fall months needs to be followed by additional rainfall events during the winter months for recruitment to occur. After several consecutive years of favorable conditions, a parent rosette may become ringed with smaller rosettes. In years with unfavorable climatic conditions, established plants may remain dormant and persist underground by their fleshy roots. Therefore, the number of above-ground plants observed in any year represents only a portion of the population.

Pavlik and Barbour (1985, pp. 15, 21) note that Eureka Valley evening-primrose is capable of abundant and precocious seed production. Eureka Valley evening-primrose has seed characteristics that provide mechanisms to ensure some seeds remain near the parent plant and some seeds disperse far from the parent plant. These characteristics ensure that there is a potential source of seed to supplement existing populations or establish new populations. Under laboratory conditions, seeds may remain viable at least 8 years (Pavlik and Barbour 1986, pp. 31, 36, 81). However, seed age or exposure to unfavorable conditions (such as heat and moisture) can reduce seed viability (Pavlik and Barbour (1986, p. 31). Some seeds may also be lost and unavailable for future recruitment. This may occur if wind

disperses seeds outside of suitable habitat.

Age-class distribution, survival, and mortality of Eureka Valley evening-primrose were examined by Pavlik and Barbour (1985, 1986). Research results indicate that despite the observed high mortality of young plants, short-lived cohorts (plants produced from a given year's reproduction that do not survive to the following year) produced large amounts of seed when compared to cohorts with high survivorship (plants produced from a given year's reproduction that have a high rate of survival to the following year), which produced relatively smaller amounts of seed (Pavlik and Barbour 1986, p. 10). Consequently, years with low plant survival potentially produce seed numbers equal to or better than years with high survival. Coupled with the contribution of vegetative reproduction (i.e., production of rosettes from branched rootstock), this copious seed production may compensate for short lifespans and high mortality observed by Pavlik and Barbour (1986, p. 14).

Monitoring efforts were initiated by the Park Service in the Eureka Valley in 2007, but this level of monitoring is not expected to continue if the species is delisted (Cipra and Fuhrmann 2013). Between 2010 and 2013, a combined effort by the U.S. Geological Survey (USGS) and Chow (Chow and Klinger 2013, entire) implemented an additional monitoring protocol for Eureka Valley evening-primrose. These monitoring efforts provided information on Eureka Valley evening-primrose's population structure (life-history stages), spatial distribution, and abundance. However, due to differences in methods for life stage classification and estimating spatial extent, and because neither the Park Service or USGS tracked the survivorship of individual plants, we cannot make a direct comparison between these monitoring efforts and the study conducted by Pavlik and Barbour (1986, entire) in the 1980s. Consequently, we cannot determine if current populations of Eureka Valley evening-primrose exhibit similar survival rates observed by Pavlik and Barbour (1986). However, assuming Eureka Valley evening-primrose populations continue to experience high mortality among recruits, recruitment from one year to the next is likely low.

Rangewide Distribution

As stated above in the Background section, all known, extant populations of Eureka Valley evening-primrose occur within Eureka Valley in Death Valley National Park (see Figure 1, above). The first known distribution map of this species is from 1976 (BLM 1976, p. 16). However, the most recent distribution maps generated in 2007 and 2008 (Park Service 2008a) and between 2011–2013 (Park Service 2011a, 2012a, 2013a) are the most detailed and accurate.

Eureka Valley evening-primrose occupies the stabilized, gentle dune slopes extending out onto the shallower sand fields bordering the dune systems of Eureka Valley (Bagley 1986, p. 10; Service 1982, p. 7). We have previously described in our 5-year status review (Service 2007a, Appendix A) the spatial distribution of Eureka Valley evening-primrose and the surveys that occurred following listing of the species and up to the late 1990s. Therefore, we are limiting our discussion in this proposed rule to the new information collected from the Park Service's monitoring program from 2007 to 2013, which was not available at the time of the 5-year status review.

Since 2007, new information on the species distribution (specifically, the above-ground expression of rosettes and flowering individuals) has been provided by the Park Service (Park Service 2008a, 2010a; 2011a; 2011b; 2012a; 2013a). As part of its survey efforts, the Park Service has mapped the extent of Eureka Valley evening-primrose at the southern end of Marble Canyon Dunes (i.e., the unnamed site), which had not been fully documented previously. In summary, the above-ground distribution of Eureka Valley evening-primrose may vary significantly from year to year (such as comparisons of data between 2007 and 2013, the latter of which captured a mass germination event that occurred on the sand flats of Eureka Dunes in March 2013 (Park Service 2013a, pp. 5, 8)). These variations require us to rely on more than a single survey event (i.e., we rely on a composite over time of its general habitat and distribution) to determine how much habitat the species occupies. Additionally, Eureka Valley evening-primrose's distribution may vary geographically within the same year, as observed at the Saline Spur and Marble Canyon Dunes in 2008 and 2013 (Park Service 2013a, pp. 4, 5, 12, 14).

Quantifying changes in the distribution of Eureka Valley evening-primrose since listing by comparing historical and current distribution maps is challenging due to the varying methods used to collect data, the level of detail that was achieved with those methods, and survey intensity. However, comparing historical and current distribution maps can indicate, over a long time period, if the population has persisted in certain locations. Overall, the presence and absence maps generated between 2007 and 2013 are more precise than any previously generated maps because the Park Service implemented a standardized survey method and created a grid system that allowed them to note specific changes in the distribution of the Eureka Valley evening-primrose. On a small scale, the usefulness of comparing recent maps with historical maps is limited because the 2007–2013 maps only reflect the above-ground expression, which shows extreme annual variation of the species for those particular years. On a large scale, however, these recent maps indicate that the populations are still present in the same general locations that they were known from at the time of listing and at the time of our 2007 5-year status review.

Abundance Surveys and Population Estimates

Abundance data for Eureka Valley evening-primrose have been collected by various parties and entities between 1974 and 2013. However, it is difficult to compare older and newer data sets due to the annual fluctuation in the above-ground distribution of Eureka Valley evening-primrose, as well as differences in methodology and scale. Consequently, estimating total population size is difficult at best. Additionally, we have no information regarding population size of Eureka Valley evening-primrose at the time of listing; abundance surveys (which could be used to estimate population size) prior to listing were limited to the north end of Eureka Dunes. Therefore, we cannot determine how populations may have changed over time and across the range of the species since listing.

Our evaluation of the Park Service's 2011 data set (which is the only year of data collected that allows a comparison across three different survey methods) indicates the estimated number of Eureka Valley evening-primrose individuals (i.e., above-ground expression) is within the range of 8,409 to 15,357 (see ''Abundance Surveys and Population Estimates—Eureka Valley evening-primrose'' section of the Background Information document (Service 2014, pp. 26–30)). The Park Service also estimated the total population size in 2011 to be 8,028 individuals (which included a slight recalculation from the previous estimate), and in 2013 to be 21,286 individuals (Park Service 2013a, p. 7), the latter of which documents a substantial increase in the above-ground expression of plants following a mass germination event observed on the sand

flats to the east and northeast of the Eureka Dunes (Park Service 2013a, pp. 4, 8; Chow and Klinger 2013, p. 4). Park staff theorized that a localized rainstorm may have triggered germination, because other locations for Eureka Valley evening-primrose did not respond similarly, and because substantial rainfall was not documented by weather stations surrounding Eureka Valley (Park Service 2013a, p. 14). The USGS and Chow (Chow and Klinger 2013, pp. 4–5) theorized that the mass germination event may be the result of higher soil moisture in this area because of soil texture or higher runoff due to the location's close proximity to the Last Chance mountain range. Although a ''high'' average density of plants was noted in the month of March at the sand flats, a follow-up visit in May indicated that most of these had disappeared; of those that survived, most had failed to flower or set seed (Park Service 2013a, p. 15; Cipra 2013, pers. comm.). USGS also noted that a lower proportion of individuals were in the reproductive stage at this location (Chow and Klinger 2013, pp. 4, 5). This information indicates that occasional mass germination events do occur, although such events do not necessarily result in successful recruitment of all individuals into the population. It also demonstrates how the above-ground expression of Eureka Valley evening-primrose can fluctuate substantially over a short period of time.

Although information on abundance and long-term population trends are limited in spatial extent, the best available data indicate (as stated above) that the Eureka Valley evening-primrose population is estimated to be in the thousands. However, it also is important to note that actual population sizes may vary greatly from the estimates described above for the following reasons:

(1) The size of the area on which densities were calculated is small (i.e., 1-ha monitoring plots or line transects) in comparison to the size of the area to which the densities are being extrapolated (i.e., the dune systems).

(2) Because Eureka Valley evening-primrose is clonal and exhibits a somewhat clumped distribution, it is often difficult to count individuals, and in general it is difficult to estimate the true population size (i.e., individuals can be both underestimated and overestimated).

(3) Different survey methods will result in different estimates of abundance.

(4) The density data used to estimate the 2011 population size only reflect the above-ground distribution of the species for that particular year.

(5) The Eureka Valley evening-primrose exhibits high annual variation, so the estimated population size will vary depending on the data collected within a given year.

(6) These population estimates include both reproductive and nonreproductive individuals; we do not know how many nonreproductive individuals survive to flower and set seed.

Eureka Dune Grass

Species Description, Taxonomy, and Life History

Eureka dune grass is a perennial, hummock-forming (development of mounds of windblown soil at the base of plants on dune landscapes) grass comprising a monotypic genus (genus containing only one single species) of the grass family (Poaceae). The coarse, stiff stems reach 20 in (50 cm) in height, and the lanceolate leaves are tipped with a sharp point (DeDecker 1987, p. 2). Flowers are clustered in spike-like panicles and produce seeds that are 0.16 in (4 millimeter (mm)) long and 0.08 in (2 mm) wide (Bell and Smith 2012, p. 1496). The root system becomes fibrous and extensive over time and can give rise to adventitious stems. Based on its morphological characteristics and taxonomic affinities, the species is thought to be a relictual species, which exists as a remnant of a formerly widely distributed group in an environment that is now different from where it originated.

Eureka dune grass is dormant during the winter and begins to produce new shoot growth around February. Growth accelerates in May, with flowering from April to June and seed dispersal between May and July (Pavlik 1979a, pp. 47–49; Pavlik 1979b, p. 87; Service 1982, pp. 4–6). Like all grass taxa, the flowers of Eureka dune grass are wind-pollinated and therefore do not rely on insect pollinators. Eureka dune grass does not appear to propagate asexually (Pavlik and Barbour 1985, p. 4); therefore, sexual reproduction is considered to be the dominant form of reproduction for this species.

Individuals have been observed to continue growing for at least 12 years with no signs of senescence (Henry n.d., pers. comm. *in* Pavlik and Barbour 1986, p. 11), and likely can grow for decades; older individuals form large hummocks that can reach on the order of 2,500 cubic decimeters (88 cubic feet; extrapolated from Pavlik and Barbour (1988, p. 229)). Germination of new individuals appears to occur infrequently, typically in response to rainfall during the summer months (Pavlik and Barbour 1986, pp. 47–59).

The following information on Eureka dune grass seedbank ecology is available related to seed production, dispersal, seed fate (based on wind dispersal and seed predation), viability, and germination:

- The amount of Eureka dune grass seed produced per individual increases with canopy size, which means that larger individuals may contribute more seed to the seed bank (Pavlik and Barbour 1985, p. 14). Compared to other perennial grass species, Eureka dune grass produces low numbers of seeds per individual (Pavlik and Barbour 1986, p. 30); this low seed production could be due to the inefficiency of wind pollination and the low density of individuals across the dunes (Pavlik and Barbour 1985, p. 17).
- Eureka dune grass seeds with floral bracts may disperse long distances whereas seeds without floral bracts may remain near the parent plant (Pavlik and Barbour 1985, pp. 40–41). Long-distance seed dispersal is important in forming new or supplementing existing populations (although wind dispersal could send seeds outside of suitable habitat and thus make them unavailable for future recruitment). In contrast, seeds remaining near the parent plant are important in supplementing existing populations.
- Seed predation may occur from insects and rodents. The amount of predation by scale insects and rodents was first studied by Pavlik and Barbour (1985, 1986). Pavlik and Barbour's (1985, p. 59) preliminary observations in 1985 indicated a small percentage (less than 2 percent) of pre-dispersal seed predation occurred by scale insects, whereas in 1986, they (Pavlik and Barbour 1986, p. 32; 1988, pp. 233–234) found that 14 percent of Eureka dune grass seeds (without floral bracts) and 6 percent of disseminules (seeds with floral bracts) were removed overnight by rodents. However, these data were only collected from the north end of Eureka Dunes. Therefore, we cannot determine if the level of insect and rodent predation observed by Pavlik and Barbour (1985, 1986) on seeds occurs across the range of the species or how it may affect the population due to the limited scope and duration of the study. However, given the species continues to occupy the same general distribution, it does not appear that the level of seed predation is causing population-level declines.
- Under laboratory conditions, seeds may remain viable for at least 8 years (Pavlik and Barbour 1986, pp. 31–32;

1988, p. 233). However, seed age or exposure to unfavorable conditions such as heat and moisture can reduce seed viability (Pavlik and Barbour 1986, pp. 31–32).

• An important factor in the persistence of Eureka dune grass may be the mass germination and establishment of Eureka dune grass seedlings (Pavlik and Barbour 1986, p. 55), particularly from seeds in the seed bank. These mass germination events are likely dependent on rare, above-average rainfall during the summer months (Pavlik and Barbour 1986, p. 51). For instance, the extremely wet conditions in July 1984 led to the mass germination and establishment of Eureka dune grass seedlings in 1984 and 1985; these favorable climatic conditions occurred only once in the previous 90 years (Pavlik and Barbour 1986, p. 54). More frequent climatic events that occur every 11 to 15 years may result in smaller germination and establishment events, which may serve to supply new individuals and replace those individuals that are lost through senescence (Pavlik and Barbour 1986, p. 54).

A demographic study was initiated in 1985 (Pavlik and Barbour 1985, entire; 1986, entire) to better understand how population attributes affected local abundance and persistence of Eureka dune grass; the study tracked the fate of seedlings established in 1984 (1984 cohort), as well as mature and senescent individuals. However, we note two constraints to these data: (1) The study was spatially restricted to the north slope of the Eureka Dunes and thus is not representative of the entire range of the species; and (2) The study was carried out over a 2-year period that included a year with very high rainfall that triggered a mass germination event followed by a year with very low rainfall. Thus, the conclusions generated from this study may not be representative of the population's response over a longer period of time. Given these constraints, results indicate that 24 percent of the 1984 cohort survived to develop into hummocks and 92 percent of the mature and senescent plants survived (Pavlik and Barbour 1986, pp. 9–10; 1988, p. 225). The cause of mortality among recruits was attributed to uprooting and damage from windstorms (Pavlik and Barbour 1986, p. 9; 1988, p. 225). A follow-up survey in 1987 found more than 90 percent of the 1984 cohort alive and growing (Pavlik and Barbour 1988, p. 225). This information indicates that once young plants become established, survival rates may be equal to that of mature and senescent plants.

Using survivorship data from the demographic study described above, Pavlik and Barbour (1986, p. 11) attempted to compare potential persistence of Eureka dune grass with other perennial grass species and two other Eureka Valley endemic plants (i.e., Eureka Valley evening-primrose and *Astragalus lentiginosus* var. *micans* (shining milk-vetch)). Although the comparisons were limited in scope and duration, Pavlik and Barbour (1986, p. 11) estimate that the established population of Eureka dune grass might persist for 88 years in the absence of recruitment. However, based on study limitations, including use of data collected following a rare mass germination event, this number may be an overestimate.

Similar to Eureka Valley evening-primrose (see *Eureka Valley Evening-primrose* section, above), monitoring of Eureka dune grass was initiated in 2007 (Park Service 2008a, entire). These monitoring efforts have provided information on Eureka dune grass population structure (life-history stages), spatial distribution, and abundance. Results indicate that the majority of the Eureka dune grass population was in its reproductive stage (33 to 66 percent) and a very small percent (0 to 3 percent) was in the nonreproductive seedling stage (Park Service 2008a, p. 13). Due to differences in how life stage classifications were made and in spatial extent of study areas, we cannot make a direct comparison between the study conducted by Pavlik and Barbour (1985, 1986) and Bagley (1986) and the information collected by the Park Service (Park Service 2008a). Additionally, the Park Service did not track the survivorship of individual plants; therefore, we cannot determine if current populations of Eureka dune grass exhibit similar survival rates observed by Pavlik and Barbour (1986, pp. 9–10; 1988, p. 225) in the 1980s. Even so, information collected by Pavlik and Barbour (1985, 1986), Bagley (1986), and the Park Service (2008a) indicate that: (1) Though the age-distribution within the population varies depending on the time of data collection, adult plants typically make up the majority of the population; and (2) Recruitment from year to year is likely low, but high recruitment each year is probably not necessary for the population to persist because of the long lifespan and high survivorship of the plants once they are established. Ultimately, population persistence will depend on the replacement of adult and senescent plants with new recruits.

Rangewide Distribution

As stated above in the Background section, all known, extant populations of Eureka dune grass occur within Eureka Valley in Death Valley National Park (see Figure 1, above). The first known distribution map of this species is from 1976 (BLM 1976, p. 16). However, the most recent maps generated in 2007 and 2008 (Park Service 2008a) and between 2011 and 2013 (Park Service 2011a, 2012a, 2013a) are the most detailed and accurate.

Eureka dune grass occupies the gentle to relatively steep slopes of the Eureka Dunes, and variable terrain of Saline Spur and Marble Canyon Dunes (Pavlik 1979a, pp. 35–36; Pavlik 1979b, p. 47; Service 1982, p. 4). At the time of listing, there were three known populations of Eureka dune grass within Eureka Valley, with the majority of the distribution on the Eureka Dunes (43 FR 17910; April 26, 1978). As mentioned above, although additional plants were subsequently discovered and described at the southern end of Marble Canyon Dunes, these are considered and described within this document as part of the Marble Canyon Dunes population.

We have previously described in our 2007 5-year status review the spatial distribution of Eureka dune grass and the surveys that occurred following listing of the species and up to the 1990s (Service 2007b, Appendix A). Therefore, we are limiting our discussion in this proposed rule to the new information collected from the Park Service's monitoring program from 2007 to 2013, which was not available at the time of the 5-year status review.

Quantifying changes in the distribution of Eureka dune grass since listing by comparing historical and current distribution maps is challenging due to the varying methods used to collect data, the level of detail that was achieved with those methods, and survey intensity. However, comparing historical and current distribution maps can indicate, over a long time period, if the population has declined or increased in certain locations. Overall, the presence and absence maps generated between 2007 and 2013 are more precise than any previously generated maps because the Park Service implemented a standardized survey method and created a grid system that allowed them to note specific changes in the distribution of the Eureka dune grass. Additionally, as part of its survey efforts, the Park Service has mapped the extent of Eureka dune grass at the southern end of Marble Canyon Dunes (i.e., the

unnamed site), which had not been fully documented previously.

Based on the life history of Eureka dune grass (see ''Eureka Dune Grass Biology'' section of the Background Information document, Service 2014, pp. 13–14), there is likely minimal annual variation in the distribution of Eureka dune grass because this species is long-lived, and mortality of young plants (once they become established) is relatively low and decreases with age. Consequently, to quantify changes in the distribution of Eureka dune grass that have occurred since listing, we compared the Park Service's 2013 distribution map to older maps (i.e., maps from the BLM (1976) and DeDecker (1979)). Again, those caveats mentioned previously (i.e., differences in survey methods, level of detail, survey intensity) make comparing distribution maps spanning a 37-year period difficult; however, these comparisons yield information regarding areas where the changes in the distribution of the population may have occurred. Based on our evaluation of current and historical distribution maps, the distribution of Eureka dune grass at Eureka Dunes appears relatively unchanged, and it continues to occupy habitat across the entire dune system, including habitat at the southern end of Marble Canyon Dunes (i.e., the unnamed site), which had not been fully documented previously.

Because the current Eureka dune grass distribution maps may not capture what is occurring on a small scale (such as localized declines in the density of plants) or the area occupied by the species, three additional analyses were conducted.

(1) Using distribution data between 2007 and 2013, the Park Service (2013a, entire) calculated changes in the number of 1-ha grid cells occupied by Eureka dune grass. Results showed a decrease in the number of grid cells occupied at Eureka Dunes, and no change at Marble Canyon and Saline Spur Dunes (Park Service 2013a, pp. 4, 5). Specifically at Eureka Dunes in 2012, Eureka dune grass was present at 397 cells as compared to 446 cells in in 2007; in 2013, Eureka dune grass was present at 390 cells (Park Service 2013a, p. 4). Thus, a change in Eureka dune grass distribution is evident at one location, but not represented across the range of the species at this time.

(2) In 2012 and 2013, the Park Service mapped individual clumps of Eureka dune grass on Eureka Dunes to help track the fate of individual clumps over time and to further ground-truth the 1-ha plot GPS-referenced grid system study employed between 2007 and 2013 (Park Service 2012a, 2013a). In 2013, the Park Service (2013a, p. 4) noted dead and dying hummocks on the northeast and southwest side of Eureka Dunes, which is consistent with the change in distribution observed in the Park Service's (2013a, p. 4) analysis at Eureka Dunes. Based on the Park Service's 2013 map, we calculated that 86 ac (35 ha) of the surface of the 2,003-ac (811-ha) Eureka Dunes (less than 4.3 percent) is occupied by Eureka dune grass (Service 2013b, unpublished data). While this new mapping effort will help refine existing monitoring, this information is limited in use because (to date) it only represents 2 years of data at two locations on one of three dunes where the species occurs. If the Park Service conducts additional mapping surveys in the future, new data could be more useful to help determine how the distribution of Eureka dune grass is changing over time.

(3) We inspected photopoints taken at Eureka Dunes as early 1974 to those in 2013 in an attempt to observe possible changes in Eureka dune grass abundance and distribution over time. Our visual inspection indicates a reduction, or in some cases a loss, in the visible Eureka dune grass individuals (especially in the number of large reproductive plants) at the north and southwest end of Eureka Dunes, and portion of Marble Canyon Dunes. We also calculated what proportion of the dunes were represented by the ''viewshed'' in the photopoints to determine to what extent the observed reduction represented conditions for the species dunewide. Results indicate that approximately 670 ac (271 ha), or 33.4 percent of the Eureka Dunes was visible in the photopoints taken from the north and south end of the dune (Service 2013c, unpublished data). Repeat photopoints were also made at a portion of Marble Canyon Dunes. The photopoints captured 130 ac (53 ha) out of a total 610 ac (247 ha) of the Marble Canyon Dunes, which constituted 21 percent of the dune and showed a similar visible reduction in the Eureka dune grass individuals over time. While our ''viewshed'' analysis likely overestimates the area visible from these photopoints, it represents our best estimate of the area covered by these repeat photopoints. The observation that a portion of the population at the north and southwest end of Eureka Dunes and part of Marble Canyon Dunes may be experiencing a decline in the abundance and distribution of large, reproductive individuals may be important if these individuals are not replaced. However, while a reduction in visible Eureka dune grass individuals is clearly noticeable from a visual inspection, it is difficult to quantify this reduction in terms of estimating changes in population distribution, densities, or abundance. Additionally, without other quantitative data to assist in interpretation, it is difficult to distinguish whether visual changes represent local shifts in distribution and density or rangewide changes in the population. Because our analysis is limited to only a portion of the range of the species, we cannot determine what changes in distribution and abundance have occurred over this same time period across the rest of the species' range within Eureka Valley.

On a small scale, the usefulness of comparing recent maps with historical maps is limited because of the higher precision that was possible in the 2007 to 2013 surveys. Overall and on a large scale, however, the most recent maps indicate that Eureka dune grass populations are still present in the same general locations that they were known from at the time of our 2007 5-year status review.

Abundance Surveys and Population Estimates

Developing population estimates for Eureka dune grass is challenging. We have no information regarding population size at the time of listing, and abundance surveys (which could be used to estimate population size) prior to listing were limited to the northern end of Eureka Dunes. Data collected since listing that could be used to estimate the abundance or population size of Eureka dune grass vary in methods, study areas, timing, and environmental conditions. Abundance data have been collected by various parties and entities between 1974 and 2013 (e.g., Henry 1976; Bagley 1986; Park Service 2008a, 2010a, 2011a, 2011b, 2012a, 2013a). It is difficult to compare these data sets primarily due to the use of different methodologies used and because the earlier efforts were limited in spatial extent. Therefore, we cannot determine how Eureka dune grass populations may have changed over time and across the range of the species since listing. Nevertheless, as discussed above for Eureka Valley evening-primrose, there is some usefulness to calculating these estimations as they provide an approximation of the size of each of the populations over time.

Park Service (2008a) data (e.g., resurveys of Henry (1976) and Bagley (1986) transects) provide the most site-specific comparison at this point in time, identifying statistically significant

declines in Eureka dune grass at the north end of Eureka Dunes (Park Service 2008b, pp. 5–6 and 17–18), which indicate a reduced number of large, reproductive Eureka dune grass individuals in this portion of Eureka Dunes. Additionally, photopoint comparisons over time at the north and southwest end of Eureka Dunes and a portion of Marble Canyon Dunes also indicate a loss of large, reproductive individuals at these locations. Because large reproductive individuals contribute disproportionately to the seed bank (see ''Ecology—Eureka dune grass'' section of the Background Information document, Service 2014), the loss of these individuals could affect the extent of seed bank available for future recruitment, at least at these locations where losses have been indicated. Finally, between 2007 and 2010, the Park Service also recorded the number of individuals in four life stages (i.e., vegetative, reproductive, seedling, and senescent) within monitoring plots (a subset of the grid system) in an attempt to provide a better understanding of population density and detect possible changes in population size. Because mortality is high in Eureka dune grass individuals until they become established and reproductive individuals are necessary to maintain the seedbank, we are interested in knowing how the number of reproductive individuals changes over time. However, it is difficult to determine how the number of individuals changes over time because it is difficult to classify and count individuals, there were a small number of plots established at each dune, and the Park Service only monitored these plots for 3 years.

Because of the limitations identified above, as well as the fact that previous studies documenting the abundance of Eureka dune grass were limited to the north end of Eureka Dunes (and thus may not be representative of the species' abundance at Eureka Dunes or at the other dunes), we are only using data from the monitoring plots established by the Park Service (Cipra *in litt.* 2011) at all three dunes (i.e., survey data from 2011 and 2013) to provide a population estimate for Eureka dune grass. For the same reasons as presented above for Eureka Valley evening-primrose, in order to compare survey methods across years prior to 2013, we only used 2011 data (i.e., the most complete data set prior to 2013 that included habitat-wide surveys of all three dunes in the same year). The Park Service estimated the total population size to be 8,014 individuals in 2011, and 8,176 individuals in 2013 (Park Service 2013a, p. 7). Based on this information, thousands of Eureka Dune grass individuals exist, and the number was relatively stable across the 2 years compared.

Finally, it is important to note that these population estimates are extrapolations; therefore, the true population size may vary greatly for the following reasons:

(1) The size of the area on which abundance counts were calculated is small (i.e., 1-ha monitoring plots or estimates of relative density within the grid system) in comparison to the size of the area to which the densities are being extrapolated (i.e., the dune systems).

(2) Because Eureka dune grass exhibits a somewhat clumped distribution, it is often difficult to count individuals, and in general it is difficult to estimate the true population size (i.e., individuals can be both underestimated and overestimated).

(3) These population estimates include both reproductive and nonreproductive individuals; we do not know the abundance of reproductive individuals within the population.

Regardless of these limitations in extrapolating population estimates for Eureka Dune grass, the best available data indicate the species continues to persist within Eureka Valley across its range (and as stated above, we have no information regarding population size at the time of listing for comparison, with population surveys prior to listing being limited to the northern end of Eureka Dunes). Currently, Eureka Dune grass is known to persist at all three dunes and is represented by thousands of individuals at each of these locations per the best data available from the Park Service.

Recovery and Recovery Plan Implementation

Section 4(f) of the Act directs us to develop and implement recovery plans for the conservation and survival of endangered and threatened species unless we determine that such a plan will not promote the conservation of the species. Under section 4(f)(1)(B)(ii), recovery plans must, to the maximum extent practicable, include: ''Objective, measurable criteria which, when met, would result in a determination, in accordance with the provisions of [section 4 of the Act], that the species be removed from the list.'' However, revisions to the list (adding, removing, or reclassifying a species) must reflect determinations made in accordance with sections 4(a)(1) and 4(b) of the Act. Section 4(a)(1) requires that the Secretary determine whether a species is endangered or threatened (or not) because of one or more of five threat factors. Section 4(b) of the Act requires that the determination be made ''solely on the basis of the best scientific and commercial data available.'' Therefore, recovery criteria should help indicate when we would anticipate an analysis of the five threat factors under section 4(a)(1) would result in a determination that a species is no longer an endangered species or threatened species because of any of the five statutory factors.

Thus, while recovery plans provide important guidance to the Service, States, and other partners on methods of minimizing threats to listed species and measurable objectives against which to measure progress towards recovery, they are not regulatory documents and cannot substitute for the determinations and promulgation of regulations required under section 4(a)(1) of the Act. A decision to revise the status of or remove a species from the Federal List of Endangered and Threatened Plants (50 CFR 17.12) is ultimately based on an analysis of the best scientific and commercial data then available to determine whether a species is no longer an endangered species or a threatened species, regardless of whether that information differs from the recovery plan.

In 1982, we finalized the Eureka Valley Dunes Recovery Plan, which included both Eureka Valley evening-primrose and Eureka dune grass (Recovery Plan; Service 1982). Following guidance in effect at that time, the Recovery Plan did not include criteria that specifically addressed the point at which threats identified for each species would be removed or sufficiently ameliorated. Instead, the Recovery Plan identified two objectives, each with specific recovery tasks, to consider Eureka Valley evening-primrose and Eureka dune grass for downlisting to threatened status, and eventually, delisting (Service 1982, pp. 26–41). These two objectives are:

(1) Restore the Eureka dune grass and the Eureka Valley evening-primrose to threatened status by protecting extant populations from existing (i.e., in 1982) and potential human threats.

(2) Determine the number of individuals, populations, and acres of habitat necessary for each species to maintain itself without intensive management, in a vigorous, self-sustaining manner within their natural historical dune habitat (estimated 6,000 ac (2,428 ha)) and implement recovery tasks to attain these objectives.

Objective 1: Restore the Eureka dune grass and the Eureka Valley evening-primrose to threatened status by protecting extant populations from existing (i.e., in 1982) and potential human threats

Objective 1 is intended to remove existing human threats to populations of Eureka Valley evening-primrose and Eureka dune grass through enforcement of existing laws and regulations, and management of human access to Eureka Valley (Service 1982, p. 26). At the time of listing, the primary threat to both species was off-highway vehicle (OHV) activity, and a lesser threat was camping on and around the dunes (43 FR 17910; April 26, 1978). Since listing, potential human threats have included other recreational activities such as sandboarding and horseback riding.

Various land management activities have been implemented by the BLM (prior to Park Service acquisition of the Eureka Valley area in 1994) and the Park Service (since 1994). All of the dune systems within Eureka Valley have also been designated as Federal wilderness areas. A number of management activities have been implemented to support the long-term protection of Eureka Valley evening-primrose and Eureka dune grass within the Federal wilderness area, including (but not limited to): making OHV activity illegal; conducting patrols to enforce laws, regulations, and restrictions; closing and restoring unauthorized roads; installing interpretative signs, barriers, and wilderness boundary signs; and delineating and maintaining campsites (Park Service 2008b, 2009, 2010b).

Additionally, various education and public outreach (e.g., public awareness program, interpretive displays) has been conducted to reduce overall impacts to the species. Because all three populations occur within Federal wilderness areas that are now protected against the threats identified as imminent at the time of listing and in the Recovery Plan, we conclude that this recovery objective has been met.

Objective 2: Determine the number of individuals, populations, and acres of habitat necessary for each species to maintain itself without intensive management, in a vigorous, self-sustaining manner within their natural historical dune habitat (estimated 6,000 ac (2,428 ha)) and implement recovery tasks to attain these objectives

Although this objective in the 1982 recovery plan is not the clearest example of a measurable and objective criterion, the intent is to evaluate the status of both species with regards to demographic characteristics to determine whether they could be considered recovered as opposed to meeting either the definition of an endangered species or the definition of a threatened species, and more importantly to attain the desired demographic levels necessary for recovery. While we have not yet developed precise values for all of the various demographic characteristics that help us determine whether the removal of threats have the desired effect (e.g., stable populations, positive growth), both species still occupy all three dune systems, and the best available monitoring data indicate thousands of plants are present at each dune system. Additionally, the best available information indicates that the BLM and Park Service have sufficiently minimized OHV and other recreation activities that were previously impacting the populations and their habitat. Even though the precise values of all demographic characteristics are not known, we note that many research and monitoring efforts have occurred for both species since the time of listing (unless otherwise noted), which have provided information on the life-history needs of both Eureka Valley evening-primrose and Eureka dune grass, as well as potential impacts to both species, including (but not limited to) the following studies:

(1) Conducting a series of studies on both species to investigate effects of pollination on seed set, seed ecology, species' demography, and plant and animal interactions (herbivory, seed predation, and dispersal) (Pavlik and Barbour 1985, 1986).

(2) Establishing baseline conditions for monitoring trends of both species across all three dune systems (Bagley 1986).

(3) Studying the genetic diversity of all Eureka dune grass populations (Bell 2003).

(4) Conducting partial distribution surveys of both species on portions of various dunes (Beymer *in litt.* 1997a; Peterson *in litt.* 1998), as well as documenting the distribution and abundance of Russian thistle, a potential competitor, across all three dune systems (Park Service 2011b).

(5) Documenting distribution, abundance, and demography of both species (Park Service 2008a, 2008c, 2010a, 2011a, 2011b, 2012a, 2013a).

(6) Determining if vegetation succession at the northern end of Eureka Dunes (Eureka dune grass habitat) is associated with changes in subsurface hydrology (Park Service 2008c, p. 4).

(7) Investigating potential competition between Russian thistle and Eureka Valley evening-primrose, and the effects of herbivory on Eureka Valley evening-primrose (Chow and Klinger 2013; Chow *in litt.* 2011).

(8) Monitoring photopoint stations over time, starting in 1985, and retaken at various intervals (Park Service 2008c, 2011b).

As a result of the considerable work that has been undertaken to understand the population dynamics and life histories of these two species, we consider the intent of Objective 2 has been partially met. Based on our review of the Recovery Plan and the information obtained from the various surveys and research activities that have occurred to date, we conclude that the status of the habitat for Eureka Valley evening-primrose and Eureka dune grass has improved due to activities that have been implemented by BLM and the Park Service. The effects of these activities on the status of the two taxa are discussed in further detail below.

Summary of Factors Affecting the Species

Section 4 of the Act and its implementing regulations (50 CFR part 424) set forth the procedures for listing species, reclassifying species, or removing species from listed status. ''Species'' is defined by the Act as including any species or subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature (16 U.S.C. 1532(16)). A species may be determined to be an endangered or threatened species because of any one or a combination of the five factors described in section 4(a)(1) of the Act: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or human made factors affecting its continued existence. A species may be reclassified or removed from the Federal List of Endangered and Threatened Plants (50 CFR 17.12) on the same basis.

Determining whether the status of a species has improved to the point that it can be downlisted or delisted requires consideration of whether the species is endangered or threatened because of the same five categories of threats specified in section 4(a)(1) of the Act. For species that are already listed as endangered or threatened, this analysis of threats is an evaluation of both the threats currently facing the species and the threats that are reasonably likely to affect the species in the foreseeable future

following the delisting or downlisting and the removal or reduction of the Act's protections.

A species is an ''endangered species'' for purposes of the Act if it is in danger of extinction throughout all or a significant portion of its range and is a ''threatened species'' if it is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The word ''range'' in the significant portion of its range phrase refers to the range in which the species currently exists, and the word ''significant'' refers to the value of that portion of the range being considered to the conservation of the species. The ''foreseeable future'' is the period of time over which events or effects reasonably can or should be anticipated, or trends extrapolated. For the purposes of this analysis, we first evaluate the status of the species throughout all its range, then consider whether the species is in danger of extinction or likely to become so in any significant portion of its range.

Brief History of Threats Analysis

At the time of listing, the primary threat to Eureka Valley evening-primrose and Eureka dune grass was OHV activity at Eureka Dunes (43 FR 17910; April 26, 1978); although not specifically stated in the final listing rule, this also presumes a lesser degree of impacts from camping that were associated with OHV activity on and around the dunes. By the time the Recovery Plan was developed in 1982 (Service 1982, entire), threats to both plants from these activities had been substantially ameliorated. Subsequently, we conducted a 5-year status review (which included an analysis of threats that affect the species) in 2007 (Service 2007a, 2007b, entire). By this point in time, the primary threat at the time of listing (OHV activity at Eureka Dunes) had been addressed with closure of Eureka Dunes by BLM, subsequent land use designations, and management measures undertaken by BLM and later by the Park Service (Service 2007a, pp. 8–10, 11–12, 13; Service 2007b, pp. 5–7, 9, 11). We also identified camping, horseback riding, and sandboarding as potential threats since the time of listing; however, we determined that these activities no longer posed a threat to the two species because of successful management implemented by the Park Service (Service 2007a, pp. 10–12, 13; Service 2007b, pp. 7–8, 11). Finally, we identified potential threats to Eureka Valley evening-primrose and Eureka dune grass in our 2007 5-year status reviews, including: Russian thistle, predation, and stochastic events; we determined that we did not have sufficient information to conclude that these impacts were a threat to the continued existence of both species (Service 2007a, pp. 11, 12–13; Service 2007b, pp. 9, 10–11).

For a detailed discussion of the current status review initiated with our 2011 90-day finding (76 FR 3069), please see the Background Information document (Service 2014, pp. 38–65). The following sections provide analyses of the potential current or future impacts to Eureka Valley evening-primrose and Eureka Dune grass, including: OHV activity (Factors A and E); other recreational activities (i.e., horseback riding, sandboarding, camping, and associated access routes) (Factors A and E); overutilization for commercial, recreational, scientific, or educational purposes (Factor B); herbivory and seed predation (Factor C); inadequacy of existing regulatory mechanisms (Factor D); competition with Russian thistle (Factor E); climate change (Factor E); and stochastic events (Factor E).

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

OHV Activity

OHV activity generally includes 4-wheel drive vehicular use of roads and trails, predominantly on public lands, for the purpose of touring, hunting, fishing, or other public land use. Within the Eureka Valley, OHV activity was an authorized use until 1976, when BLM closed Eureka Dunes and some of the surrounding area to OHVs following publication of the proposed rule to list Eureka Valley evening-primrose and Eureka dune grass. Subsequently in 1980, BLM designated Eureka Dunes and some of the surrounding area as an Area of Critical Environmental Concern (ACEC) and began compliance monitoring and management (BLM 1982, pp. 3–5). BLM's efforts resulted in few observed violations of the OHV closures between 1979 and 1994 (Service 1982, p. 24; DeDecker 1994, Harris 1994, and Stormo 1994 *in* Noell 1994, p. 9).

In general, the impacts to Eureka Valley evening-primrose and Eureka dune grass associated with OHV activity have essentially been ameliorated, in large part due to the designation of Federal wilderness areas throughout both species' ranges. First, the management of Eureka Valley was transferred from BLM to the Park Service in 1994. Subsequently in 1994, all of the dune systems within Eureka Valley were designated as Federal wilderness areas. Under the authority of the Wilderness Act of 1964 (16 U.S.C. 1131 *et seq.*), use of mechanized vehicles were no longer allowed throughout the entire ranges of both species. This OHV prohibition throughout the range of both species, along with the benefits associated with the prohibition of other activities in Federal wilderness areas (e.g., development of new roads or structures, use of motorized equipment), all of which must be implemented by the Park Service (per various laws, directives, and plans specific to the Park Service and Death Valley National Park), have essentially ameliorated the threat of OHV activity and other ground disturbance activities to both species.

Since 1994, the Park Service has documented occasional illegal OHV activity in Federal wilderness areas and has proposed additional measures to further reduce this activity; however, the Park Service acknowledges that the remote location of the dunes and limited resources make enforcing restrictions difficult (Park Service 2011b, p. 17).

OHV activity could affect Eureka Valley evening-primrose and Eureka dune grass habitat in multiple ways, as evidenced from many studies that have occurred within dune ecosystems (such as Wilshire and Nakata 1976, Webb and Wilshire 1983). Physical impacts on dunes can include compaction or erosion of sandy substrates, acceleration of wind erosion (Gillette and Adams 1983, pp. 97–109), and acceleration of dune drift (Gilberston 1983, pp. 362–365). OHV activity can also change the unique hydrologic conditions of dunes. Because dunes have the capacity to hold moisture for long periods of time, disturbance of the surface sands resulting in exposure of moist sands underneath can increase moisture loss from the dunes (Geological Society of America 1977, p. 4). Changes in physical and hydrologic properties of the dunes from heavy OHV activity could in turn affect the suitability of the dune habitat for germination and recruitment of seedlings, clonal expansion of existing individuals, and dispersal of seeds to favorable microsites.

The same potential OHV impacts that affect dune habitat can also affect Eureka Valley evening-primrose and Eureka dune grass individual plants. Normally, these types of impacts would be discussed under Factor E (Other Natural or Manmade Factors Affecting Its Continued Existence), but are included here in the Factor A discussion for ease of analysis. OHV impacts to individual plants within

dune systems and other desert ecosystems have been extensively studied (such as Bury and Luckenbach 1983, Gilbertson 1983, and Lathrop 1983). Within dunes systems, for instance, while OHV activity alters the physical structure and hydrology of the dunes (rendering the dune habitat less suitable for supporting individuals and populations of the two species), it also affects individuals directly by shredding plants or damaging root systems, thereby killing or injuring (e.g., reducing the reproduction or survival of individuals) the plants.

Although unauthorized OHV activity has occasionally occurred on the Eureka Dunes, it has not approached the levels seen prior to listing Eureka Valley evening-primrose and Eureka dune grass as endangered species. Management actions initially taken by BLM prior to listing (i.e., closure to OHV recreation) and following listing of these species (e.g., vehicle route closures, control of visitor use, visitor education, enforcement of wilderness closures) have continued and increased under Park Service management, and all populations of both species are now within designated wilderness area where OHVs are prohibited. The management of OHV activity through land use designations (i.e., ACEC, Federal wilderness areas) has resulted in the near elimination of OHV activity on Eureka Dunes at the current time. We anticipate this will continue into the future because we expect Federal wilderness areas to remain in place indefinitely, and we expect the Park Service's current management to be implemented over the next 20 years, as well as modified periodically into the future with adaptive management strategies (as demonstrated by the Park Service's natural resource management strategies to date and anticipated in the future per Park Service policies and regulations (see Factor D)). Additionally, the remote location, inaccessibility, and wilderness status of the Saline Spur and Marble Canyon Dunes appear to be providing sufficient protection for dune habitats and plants at these locations both currently and in the future. Although the Park Service has documented sporadic occurrences of unauthorized OHV activity, these occurrences are almost entirely localized to areas on and adjacent to the northern end of Eureka Dunes (Beymer 1996; Beymer *in litt.* 1997b,d,g; Beymer 1997c,e,f; Anderson 1998; Dellingers 1998a–c; Peterson *in litt.* 1998b,c; Rods 1998; Park Service circa 2000; Rods 2000; Park Service 2011b). Therefore, we conclude, based on the best available information, that the Wilderness Area designation, coupled with Park Service management of OHV activity and other visitor uses, have significantly reduced these impacts to Eureka Valley evening-primrose and Eureka dune grass and their habitat currently and into the future.

Other Recreational Activities

In addition to unauthorized OHV activity that may occur currently (as described above), other recreational activities have been known historically and currently occur (occasionally) within the Eureka Dunes, including horseback riding, sandboarding, camping outside of designated areas, and creation of access routes.

Camping and associated access routes were identified as a minor threat in the Recovery Plan because their proximity to Eureka Dunes facilitated unauthorized OHV activity (Service 1982, pg. 22, 23). Horseback riding and sandboarding were potential threats to Eureka Valley evening-primrose and Eureka dune grass identified after listing, and were discussed in the 5-year status reviews published in 2007 (Service 2007a, p. 10; Service 2007b, pp. 78). All of these activities were discussed in our 5-year review under Factor A because, like OHV activity, they have the ability to have physical impacts on the dune habitat (such as destabilization and displacement of sands); however, these same activities have the potential for damaging individual plants through crushing, trampling, and uprooting. Although impacts to individual plants are more appropriately discussed under Factor E, for ease of analysis we also discuss impacts to individual plants here.

Although horseback riding was first identified by the Park Service as a potential concern in the late 1990s, there is no information regarding the extent of an impact to Eureka Valley evening-primrose and Eureka dune grass during this period, nor is there specific evidence related to the adverse effects of trampling by horses. Regardless, the Park Service considered potential adverse effects from horseback riding to be similar to those of light to moderate OHV activity (as described by Pavlik (1979a) as one to multiple tire passes over individual plants), which in turn could trample or crush (Factor E) Eureka Valley evening-primrose or Eureka dune grass plants.

Sandboarding became popular in the late 1990s, and this activity increased within Eureka Valley specifically following an October 1997 article in *Esquire Magazine* that identified Eureka Dunes as a location to pursue this activity (Warren 1997, p. 143). There is no information regarding the extent of the adverse effects that this activity had on Eureka Valley evening-primrose or Eureka dune grass, but crushing (Factor E) of individual Eureka dune grass plants was observed in 1997 (Beymer 1997h).

Camping and access routes were first identified as a concern to Eureka Valley evening-primrose and Eureka dune grass habitat and plants as a result of observed OHV activity concentrating near the northwest corner of Eureka Dunes (BLM 1982, p. 4; Service 1982, pp. 22–23). The Recovery Plan discusses camping and associated access routes as facilitating unauthorized OHV activity, which in turn caused adverse effects to habitat for both species (Service 1982, p. 24); although the plan does not specify, we assume these activities were identified as threats because the concentration of activity could result in trampling of individual plants (Factor E) or alteration of habitat due to compaction or erosion (Factor A).

Since the time of listing, a number of actions have been implemented to reduce and eliminate impacts associated with horseback riding, sandboarding, camping, and establishment of associated access points within and around Eureka Valley evening-primrose and Eureka dune grass habitat (e.g., establishing designated wilderness areas throughout the Eureka Valley, with attendant restrictions on the development of new roads and structures, and not allowing the use of motorized vehicles off designated roads). The BLM and Park Service have implemented recommendations from the Recovery Plan (e.g., establishment of defined camping areas away from the dunes, transforming the northwest access point into a day-use-only area) (Park Service 2000, p. 11; Park Service 2006, pp. 6–7), and horseback riding and sandboarding have been prohibited since 2002 (Park Service 2002, p. 3; 2006, p. 10). The Park Service enforces the restrictions, including the wilderness area designation that prohibits OHV activity (and thus potential unauthorized camping and access routes) on the dunes. Beginning in 2007, the Park Service also expanded a program to further increase visitor compliance with the rules and regulations that outline authorized activities in the Eureka Dunes, which includes: Conducting patrols; closing and restoring illegal roads; installing interpretative signs, barriers, and wilderness boundary signs; and delineating and maintaining campsites (Park Service 2008b, 2009, 2010b). While the NPS has documented some

unauthorized activity (e.g., sandboarding, OHV activity in closed areas) that may result in minor or occasional impact to individual plants, these are infrequent occurrences and affect very small areas and are not spread throughout the range of either species (Beymer 1996; Beymer *in litt.* 1997b,d,g; Beymer 1997c,e,f; Anderson 1998; Dellingers 1998a–c; Peterson *in litt.* 1998b,c; Rods 1998; Park Service circa 2000; Rods 2000; Park Service 2011b). Therefore, the best available information at this time indicates that unauthorized OHV and other recreational activities, if they occur, are not causing population-level effects (as compared to pre-listing levels) for either species currently, nor are they expected to do so in the future, in large part due to the extensive protections and management provided by the Park Service.

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

Utilization for commercial, recreational, scientific, or educational purposes was not identified as a threat to Eureka Valley evening-primrose or Eureka dune grass in the listing rule. Both taxa have no known commercial or recreational value that we consider consumptive (that is, based on physical use or removal of the plants). Educational groups frequently visit Eureka Dunes, but we are unaware of any activities that would be considered consumptive use. Since listing, there have been three section 10(a)(1)(A) permits issued for studies involving the removal of plants, seeds, or plant parts. These studies usually involve collection of seeds or leaves for laboratory experiments or collection of voucher specimens for herbaria; in each case we analyzed potential impacts during the permitting process and determined that the collection activities would not jeopardize the continued existence of the species. Additionally, Eureka dune grass seeds were collected in 2007, as part of a joint project between the Park Service and the Center for Plant Conservation to preserve germplasm (a collection of genetic resources) of federally listed species (Fraga 2007). We do not consider this level of research and collection to pose any potential threat of overutilization for either of the species. Furthermore, the State of California and Park Service have regulatory mechanisms in place to control any potential utilization in the future (see also Factor D below). Any collection of plants would require permits from the State of California and the Park Service. We conclude that overutilization for commercial, recreational, scientific, or educational purposes is not a short-term or long-term threat to the continued existence of Eureka Valley evening-primrose or Eureka dune grass.

C. Disease or Predation

At the time of listing, disease and predation were not identified as potential threats to Eureka Valley evening-primrose or Eureka dune grass. Since then, studies on both species imply that herbivory and seed predation are potential threats for both species.

(1) Pavlik and Barbour (1985, pp. 62–63) concluded that jackrabbit pruning of Eureka dune grass would seldom lead to the death of mature plants; however, in contrast, pruning could remove branches of Eureka Valley evening-primrose or jackrabbits may cause mortality of individual plants by uprooting them. Additionally, the pruning could have a negative effect on seed production if it occurs prior to ripening and dispersal (Pavlik and Barbour 1985, pp. 60, 62–63. Pavlik and Barbour (1985, pp. 62–63) suggested that herbivory of Eureka Valley evening-primrose could result in a substantial loss of seeds entering the seed bank if peak herbivory coincided with peak seed production in a given season, though they noted that most seed production occurred prior to the start of intense herbivory.

(2) Chow (*in litt.* 2011) hypothesized that herbivory of Eureka Valley evening-primrose may affect the size, survivability, and fecundity of individual plants. Chow (*in litt.* 2011) collected preliminary information on the effects of herbivory at all three dunes in 2011. This information indicates that the level of herbivory varies at each dune, ranging from either no evidence of herbivory to the complete loss of individuals (although we note this information was limited to one season).

(3) USGS initiated a 3-year study in 2013 that includes the potential effects of herbivory on the two species. First-year data indicate that herbivore damage had a strong impact on both species, with 50 to 89 percent of tagged Eureka dune grass stems consumed or nipped off each month from March to July; and up to 99 percent of the surface area of Eureka Valley evening-primrose individuals consumed, contributing to low survival rates at all dune sites (Scoles-Sciulla and DeFalco 2013).

Although herbivory and seed predation are documented to occur, as indicated above (Pavlik and Barbour 1985; Chow in litt. 2011; Scoles-Sciulla and DeFalco 2013), the best available information is based on observations from single season evaluations, and in the case of Pavlik and Barbour's (1985) studies, limited to a portion of one population (i.e., north end of Eureka Dunes).

Seed predation and herbivory are naturally occurring processes. We expect that both Eureka Valley evening-primrose and Eureka dune grass are adapted to withstand some level of herbivory and seed predation. Given that both species have persisted since listing (and since the studies in 1985 and 1986), and continue to occupy the same general distribution, it does not appear that herbivory and seed predation by themselves are occurring at such a level to cause population-level declines or other adverse effects to either species as a whole. Based on the best available information at this time (i.e., a single season of herbivory/seed predation study; the expectation that these species have evolved with some level of herbivory/seed predation; and that herbivory/seed predation is naturally occurring, and some level of herbivory/seed predation is expected for both species), we conclude that the observed impacts are not causing population-level effects for either species currently, nor are they expected to do so in the future.

D. The Inadequacy of Existing Regulatory Mechanisms

Because the ranges of both Eureka Valley evening-primrose and Eureka dune grass now occur entirely on Park Service land, any potential for impacts to the two species would be those from Park Service activities or from activities under their jurisdiction. Regulatory mechanisms (as they relate to OHV and other recreational activities) that protect the Eureka Valley evening-primrose and Eureka dune grass habitat were discussed under Factor A above (i.e., protections afforded currently and into the future as a result of the congressionally designated wilderness). These protections, taken together, would provide adequate regulatory mechanisms to prevent the Eureka Valley evening-primrose and Eureka dune grass from becoming endangered or threatened after they are removed from the Federal List of Endangered and Threatened Plants. Additional regulatory mechanisms (not discussed above under Factor A) as they relate to Factors A, B, C, and E include the following:

(1) *Organic Act of 1916 (16 U.S.C. 1,* as amended*).* This Act promotes and regulates the use of National Parks to conserve scenery, national and historical objects, and wildlife to

provide for the enjoyment of current and future generations. Furthermore, Park Service management policies (Park Service 2006) interpret the Park Service's Organic Act in a manner that prohibits the impairment of any significant park resource. For example, there is a legal mandate to conserve and protect significant park resources; Eureka Dunes are recognized by the Park Service as a significant park resource.

(2) *General Management Plan (2002).* The Park Service manages the Eureka Valley under a broad general management plan, which identified the need for development of site-specific management for Eureka Valley (Park Service 2002, p. 7); however, such a plan has not yet been developed. Despite the lack of a site-specific management plan for the Eureka Valley, the general management plan must be consistent with the legal and stewardship mandates outlined in national and Park Service-wide laws and policies (Park Service 2002; Park Service 2006).

(3) *Wilderness and Backcountry Stewardship Plan (2013).* In 2013, the Park Service finalized its Wilderness and Backcountry Stewardship Plan and environmental assessment, which is considered an implementation plan tiered from the 2002 General Management Plan. The Park Service selected a modification of one of the alternatives (i.e., Alternative D) that would provide benefits to Eureka Valley evening-primrose and Eureka dune grass, and their habitat, by delineating existing campsites and designating additional campsites at Eureka Dunes, prohibiting camping and sandboarding on Eureka Dunes, upgrading or replacing the existing vault toilet and installing a second low maintenance toilet on the east side of the dunes, supporting a campground host during heavy visitor use periods, and increasing visitor education on- and off-site (Park Service 2013b, pp. 4, 5, 10, 16). This plan also discusses the Park Service's methods for managing nonnative plant species including (but not limited to) Russian thistle.

Removing Eureka Valley evening-primrose and Eureka dune grass from the Federal List of Endangered or Threatened Plants would not significantly change the protections afforded these species. At the time of listing, the existing regulatory mechanisms were a concern because we determined they were inadequate to address the threat to the habitat posed by OHV recreation. Currently, because the ranges of both Eureka Valley evening-primrose and Eureka dune grass occur entirely on Park Service land, any potential for impacts to the two species would be those from Park Service activities or from activities under their jurisdiction. All areas containing populations of both species are within congressionally designated wilderness (Park Service 2002). The Park Service has also prohibited other activities, such as sandboarding and horseback riding, that have potential adverse effects to populations of these species (Croissant *in litt.* 2005), and the Park Service implements extensive public outreach, promotes research, and ensures enforcement of its laws and regulations (either through patrols or potentially the future use of a campground host) to ensure impacts to both species are minimized to the maximum extent practicable (Park Service 2002, 2006, 2013b).

While most of these laws, regulations, and policies are not specifically directed toward protection of Eureka Valley evening-primrose and Eureka dune grass, they mandate consideration, management, and protection of resources that benefit these species. Additionally, these laws contribute to and provide mechanisms for agency planning and implementation directed specifically toward management of Eureka Valley evening-primrose and Eureka dune grass and their habitat. Because most of these laws and regulations are national in scope and are not conditional on the listed status of the plants, we expect these laws and regulatory mechanisms to remain in place after Eureka Valley evening-primrose and Eureka dune grass are delisted. Therefore, the inadequacy of existing regulatory mechanisms is not a threat to Eureka Valley evening-primrose and Eureka dune grass now or in the future. Additionally, although some factors described in this document may continue to cause stress to either one or both species, the existing regulatory mechanisms are sufficient to manage the continued existence of Eureka Valley evening-primrose and Eureka dune grass currently and in the future.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

OHV Activity and Other Recreational Activities

See the ''OHV Activity'' and ''Other Recreational Activities'' sections, above under Factor A, for a complete discussion of realized and potential impacts since the time of listing. As stated there, we included a complete discussion of potential impacts to both habitat and individual plants under Factor A for ease of analysis. We conclude, based on the best available information, that the Wilderness Area designation, coupled with Park Service management of OHV activity and other recreational activity, have significantly reduced potential impacts to Eureka Valley evening-primrose and Eureka dune grass individuals currently and into the future. See additional discussion above under Factors A and D.

Competition With Russian Thistle

Invasive, nonnative plants can potentially impact the long-term persistence of endemic species. *Salsola* spp. (Russian thistle) is the only invasive, nonnative species that has spread onto the dunes in the Eureka Valley. Previous information (available at the time of our 2007 5-year reviews) was generally limited to personal observations and collections with no specific information regarding the density or distribution of Russian thistle. However, due to continuing concerns expressed by the Park Service and other parties since 2007, we conducted a more thorough review of the life-history characteristics of Russian thistle and the potential impacts it could have on both species, particularly the potential for Russian thistle to compete with Eureka Valley evening-primrose and Eureka dune grass for resources such as water and nutrients.

Russian thistle is known to spread in areas where soil has been disturbed, and is commonly found along road margins, rail lines, feed lots, and abandoned agricultural fields, and in grain seed. Although the source of spread is unknown for the Eureka Valley, it was first noted there in the 1970s; agricultural activities (grazing and farming) still occur in the northern portion of Eureka Valley to the north of Death Valley National Park, likely serving as a continuing seed source.

At the time of our 2007 5-year status reviews, we briefly discussed potential competition with Russian thistle as a threat to Eureka Valley evening-primrose and Eureka dune grass. We concluded that Russian thistle was not a substantial threat to Eureka Valley evening-primrose because the latter continued to occupy areas containing Russian thistle, and there was no information regarding the effects of Russian thistle on the stability of the population (Service 2007a, p. 12). For Eureka dune grass, we also concluded that Russian thistle was not a substantial threat because there was no information to support a competitive relationship between it and Russian

thistle (Service 2007b, p. 10). Nevertheless, there was a general perception that the distribution of Russian thistle had increased since the 1980s. Therefore, since the time of our 2007 5-year reviews, we have continued to review literature pertaining to Russian thistle, and have obtained additional information from the Park Service regarding the distribution and relative density of Russian thistle within the habitat of Eureka Valley evening-primrose and Eureka dune grass (Service 2014, pp. 51–58).

In 2011, the distribution and density pattern of Russian thistle and Eureka Valley evening-primrose was mapped by the Park Service across all three dunes over several years (Park Service 2011a, pp. 18–21). In addition, the USGS noted an inverse relationship in the spatial distribution and abundance of the two species along a series of transects. Both of these studies suggested that there may be a competitive relationship for resources (for instance, water or light) between Russian thistle and Eureka Valley evening-primrose (Chow and Klinger 2013, p. 15). Therefore, in 2012, USGS initiated an *ex situ* pilot study to determine if there is a potential competitive relationship between Russian thistle and Eureka Valley evening-primrose (Chow and Klinger 2013, pp. 15–18). Preliminary information provided by Chow and Klinger (2013, pp. 17–18) indicates that intraspecific competition (competition between individuals of the same species) had a greater effect on Eureka Valley evening-primrose than interspecific competition (competition between individuals of different species) with Russian thistle. However, we note that the results of this study are preliminary and limited to a short time period (i.e., 10 weeks). Based on past and current Park Service management practices, we reasonably anticipate that the Park Service would incorporate new information received from future management and research studies into their future management plans for Eureka Valley.

Limited information is available on the effects of Russian thistle to native plant species and ecosystems, likely because Russian thistle tends to invade disturbed areas; thus, almost all available literature is based on its effects to agricultural crops and grazing lands. Regardless, general impacts to native flora, including Eureka Valley evening-primrose or Eureka dune grass, from Russian thistle could include increased competition when water is limited (Allen 1982, p. 739), or potentially reduced recruitment (such as exhibited by other invasive, nonnative plants that occur in high abundance) (Thomson 2005, pp. 615–624; Barrows *et al.* 2009, pp. 679, 683).

To better understand the overlap in distribution of Russian thistle and Eureka Valley evening-primrose, we examined the Park Service's best available data layers for each species (i.e., 2010 data for Russian thistle and 2011 data for Eureka Valley evening-primrose, which were the years in which each species had the greatest above-ground expression). Based on our analysis, the distribution of Russian thistle overlaps the Eureka Valley evening-primrose distribution over all three dunes by 84 percent (Service 2013a). However, the extent of overlap does not necessarily indicate that competition is occurring. Since 2010, there have been years with very little to virtually no germination of Russian thistle (Park Service 2011a, p. 18; 2012a, p. 4; 2013a p. 4). It is unclear whether the conditions that stimulate germination of Eureka Valley evening-primrose are the same conditions that would stimulate the germination of Russian thistle. For instance, in 2013, there was mass germination of Eureka Valley evening-primrose in the sand flats to the east of Eureka Dunes, but there was little germination of Russian thistle (Park Service 2013a, p. 4), indicating that different environmental factors are needed to trigger mass germination events in these two species. It is possible that, during years when Russian thistle is abundant, this plant may compete with Eureka Valley evening-primrose for resources such as water and nutrients. However, the best available information does not indicate that Russian thistle may outcompete Eureka Valley evening-primrose for these resources either currently or in the future.

At this time, competition with Russian thistle does not appear to be impacting the Eureka Valley evening-primrose at a level that would cause population-level or species-level effects. We have reached this conclusion for the following reasons:

(1) Russian thistle abundance, like that of Eureka Valley evening-primrose, varies annually; therefore, the degree to which these species overlap will vary annually.

(2) The best available information does not indicate that the same conditions that stimulate the germination of Eureka Valley evening-primrose also stimulate germination of Russian thistle, which in turn reduces the likelihood of a competitive relationship between these species either in the short term or long term. The mass germination of Eureka Valley evening-primrose individuals in 2013 implies different environmental factors are needed to get a similar mass germination of Russian thistle to potentially impact Eureka Valley evening-primrose seedlings or established plants. Therefore, this reduces the likelihood of a competitive relationship between these species either in the short-term or long-term.

With regard to Eureka dune grass, we have already noted above that the distribution of Russian thistle occurs across all three dunes. However, the best available data indicate that the potential for Russian thistle to impact Eureka dune grass is unlikely because:

(1) Eureka dune grass typically occurs on the steeper, unstable slopes of the dunes, which appears to limit the establishment of Russian thistle; and

(2) Russian thistle roots are more shallow than those of Eureka dune grass, which reduces the likelihood of potential competition between the two species.

Additionally, based on our analysis of the Park Service's data on Russian thistle presence/absence in 1-ha grid cells, the extent of overlap between these two species at all three dunes combined is 36 percent, ranging from 19 to 91 percent among the three dunes (Service 2013b). Because the Park Service's data is limited to the presence of both species within the same 1-ha grid, these data alone do not indicate that these two species are in close proximity to each other on a smaller spatial scale (which could indicate they are competing for the same resources). However, because the abundance of Eureka dune grass is sparse (i.e., covers 4.3 percent of the entire dune habitat on Eureka Dunes), and Russian thistle is unable to colonize the steeper, unstable slopes where Eureka dune grass occurs, it is unlikely that there is much overlap between these two species at a small spatial scale, even when they both are present in the same 1-ha grid cell. Therefore, based on the best available information, we conclude that competition with Russian thistle does not pose a threat to Eureka dune grass at this time, nor is it expected to become a threat in the future.

Climate Change

Our analyses under the Act include consideration of ongoing and projected changes in climate. The terms ''climate'' and ''climate change'' are defined by the Intergovernmental Panel on Climate Change (IPCC). ''Climate'' refers to the mean and variability of different types of weather conditions over time, with 30 years being a typical period for such

measurements, although shorter or longer periods also may be used (IPCC 2007, p. 78). The term ''climate change'' thus refers to a change in the mean or variability of one or more measures of climate (e.g., temperature or precipitation) that persists for an extended period, typically decades or longer, whether the change is due to natural variability, human activity, or both (IPCC 2007, p. 78). Various types of changes in climate can have direct or indirect effects on species. These effects may be positive, neutral, or negative, and they may change over time, depending on the species and other relevant considerations, such as the effects of interactions of climate with other variables (e.g., habitat fragmentation) (IPCC 2007, pp. 8–14, 18–19). In our analyses, we use our expert judgment to weigh relevant information, including uncertainty, in our consideration of various aspects of climate change.

The final listing rule, recovery plan, and 2007 5-year status reviews did not identify climate change as potentially impacting Eureka Valley evening-primrose and Eureka dune grass. For this evaluation we used regional projections modeled until 2050, which results in an expected transition to a drier climate (Seager *et al.* 2007, pp. 1181–1184). However, other regional modeling efforts indicate that rainfall will increase throughout the Southwest (Weltzen *et al.* 2003). Of note is that that there is a substantial level of uncertainty associated with such projections for topographically complex regions, such as the western United States (Weltzen *et al.* 2003).

Local projections into the future for Eureka Valley were conducted using ClimateWizard (2011), which evaluates past trends in temperature or rainfall to project future climate conditions:

(1) For temperature, Eureka Valley has increased an average of 0.04 degrees Fahrenheit (°F) to 0.05 °F per year, resulting in a total increase of average temperature of 2.0 °F to 2.5 °F over the last 50 years. Additionally, the temperature is projected to rise an additional 4 °F by the 2050s.

(2) For rainfall, historical trends from 1951 to 2006 in the Eureka Valley indicate that rainfall has increased from 0 to 1 percent. The rainfall is anticipated to be an average of 4 in (102 mm) per year by the 2050s.

What the above projections indicate is that while there has been annual variation in climatic variables (e.g., the amount and timing of rainfall, seasonal low and high temperatures), the norms (or averages) of these variables are starting (and will likely continue) to change in response to climate change.

Long-term data on average rainfall in Eureka Valley are not available due to the lack of a weather station at this location, and trying to estimate annual rainfall or establish trends for this specific area is difficult because data used from surrounding weather stations may not accurately portray rainfall in Eureka Valley (e.g., localized storms). Pavlik (1979a, pp. 14–18; 1979b, pp. 15–20) estimated average annual rainfall in Eureka Valley was 5 in (115 mm). However, the timing of rainfall may be as important as the total amount of rainfall within a given year. For example, for recruitment of Eureka Valley evening-primrose to occur, germination during the fall months needs to be followed by additional rainfall events during the winter months (Pavlik and Barbour 1986, p. 10). Conversely, Eureka dune grass germination is dependent on above-average rainfall during the late summer months (Pavlik and Barbour 1986, pp. 47–59). The Park Service (2012b) recently examined the timing and amount of rainfall (based on a dataset from the closest weather station) between 1987 and 2012, examining the two periods of rainfall that would stimulate germination of Eureka Valley evening primrose (i.e., September through February) and Eureka dune grass (i.e., April through September). While annual rainfall during these two periods is highly variable, between 1987 and 2012, there appears to be a slight increasing trend in the amount of annual rainfall for the first period (September through February) and a decreasing trend for the second period (April through September) (Park Service 2012b). This highlights the complexity in predicting future impacts of climate change on Eureka Valley evening-primrose and Eureka dune grass because the timing of the rainfall may be as important as the total amount of annual rainfall. While the amount of rainfall will determine how deeply water infiltrates into the dune system, the timing will affect how much of this water is lost to evaporation and transpiration (Weltzin et al. 2003, p. 943). These factors (i.e., timing and amount of rainfall) compound the problem of trying to predict how climate change will affect these two species now and into the future.

The analysis conducted by the Park Service (2012b) indicates that the long-term trend in timing of rainfall may be beneficial for the germination of Eureka Valley evening-primrose. Additionally, Eureka Valley evening-primrose has adapted strategies to cope with drought. For instance, established plants may remain dormant and persist underground by their fleshy roots. In contrast, the long-term trend may not favor the germination of Eureka dune grass; however, Eureka dune grass utilizes a C4 carbon fixation pathway, which means this species uses water more efficiently during carbon fixation than plants that use the more common C3 pathway—an adaptation found more frequently in species that occur in hot, dry environments (Peterson and Soreng 2007, p. 8). This indicates that Eureka dune grass is already well-adapted to a hot, dry environment, and we expect these adaptations will help it persist.

Potential impacts from climate change may include a variety of potential changes, such as the following:

(1) A decrease in the level of soil moisture that could increase evaporation and transpiration rates and thus impact the growth or performance of individual plants (Weltzin *et al.* 2003, p. 943).

(2) Altered timing and amount of rainfall could influence germination and possibly establishment of Eureka dune grass (Pavlik and Barbour 1986, p. 47).

(3) The timing of phenological phases, such as flowering, leafing out, and seed release in both Eureka Valley evening-primrose and Eureka dune grass, could change, which has been noted in many other plant species (Bertin 2008, p. 130–131). Additionally, pollinator availability could become limited (Hegland *et al.* 2009) during the time Eureka Valley evening-primrose is flowering, which in turn could affect pollination effectiveness, and consequently the amount of seed it produces.

(4) Lower rainfall could affect survival of individual plants (e.g., reproductive adults, seedlings) and result in less frequent germination events, both of which could affect recruitment. Alternatively, increased rainfall could increase germination and survival, but could also increase competition with invasive, nonnative plants or increase the population size of herbivores. With respect to herbivores, a subsequent decrease in rainfall could result in increased herbivory of certain plants due to a decreased availability in the variety of vegetation.

Although reproduction and survival could be affected by changes in climate conditions as outlined in the potential impacts, both Eureka Valley evening-primrose and Eureka dune grass have evolved in and are adapted to a dry environment with considerable variation in temperature and rainfall (seed banks, rootstock, C4 carbon fixation, etc.). The species have evolved

mechanisms to persist through drought and variable conditions. While there is considerable uncertainty in local climate projections, we expect both species are adapted to withstand drier climate conditions.

In summary, impacts from climate change on Eureka Valley evening-primrose and Eureka Dune grass may occur in the future, although we cannot predict what the effects will be. Regardless, climate change will be affecting the climatic norms that these two species have previously persisted with, and it is probable that this shift could cause stress to both species. Even so, the best available information currently indicates these species are physiologically adapted to the specific hydrologic and soil conditions on the dunes, and the stress imposed by projected climate change currently and in the future is not likely to rise to the level that the long-term viability of Eureka Valley evening-primrose and Eureka dune grass would be impacted. Given the potential for continued climate change in the region, this potential stressor should be evaluated into the future.

Stochastic Events

Stochastic events (environmental and genetic stochasticity) could affect populations of Eureka Valley evening-primrose and Eureka dune grass. The small number of populations and restricted geographic range of the populations of Eureka Valley evening-primrose and Eureka dune grass to Eureka Valley makes them especially vulnerable to stochastic events.

Environmental stochasticity refers to variation in recruitment and mortality rates in response to weather, disease, competition, predation, or other factors external to the population. In our 2007 5-year status reviews, we provided a brief discussion regarding stochastic events, which included windstorms, extended drought (below-average rainfall over a time period greater than the historical range of variability), or a combination of these events with other unidentified catastrophic events and their potential effects, on Eureka Valley evening-primrose and Eureka dune grass (Service 2007a, p. 13; Service 2007b, p. 10). We concluded that neither windstorms nor a variation in rainfall represent a substantial threat to Eureka Valley evening-primrose or Eureka dune grass. Our discussion below elaborates on the potential effects associated with these types of events.

While windstorms may adversely affect individuals of the Eureka Valley evening-primrose or Eureka dune grass populations (by causing individual mortality from uprooting, damaging, or burying plants, or dispersing seed into unsuitable habitat such that it is unavailable for future recruitment), it is unlikely that these events have population-level effects because these species have developed adaptations (e.g., ability to reproduce vegetatively (Pavlik 1979a, p. 68; Pavlik and Barbour 1986, p. 84; Pavlik and Barbour 1988, p. 240), ability to ensure seeds remain near parent plant and disperse into uncolonized habitat (Pavlik 1979a, p. 59; 1979b, p. 71; Pavlik and Barbour 1985, pp. 27, 34, 40, 41) to counter the effects of occupying the dynamic habitat on or around the sand dune (as discussed in the ''Species Description, Taxonomy, and Life History'' sections, above, for each species).

Timing and amount of rainfall (along with other factors that stimulate seed germination) are likely important factors in the germination and establishment of Eureka Valley evening-primrose or Eureka dune grass (Pavlik and Barbour 1986, pp 10, 47–59). In the short term, unfavorable climatic conditions (such as low rainfall) may result in fewer plants, plants producing fewer seeds, and (due to stressful conditions) an increase in mortality of seedlings. This could limit recruitment during this period; however, established individuals would likely survive these conditions and continue to reproduce or go dormant. The seed banks of Eureka Valley evening-primrose and Eureka dune grass would provide some buffer to ensure the persistence of the species when conditions are less favorable. However, we note that over the long term, the increasing time between the favorable climatic conditions that favor the replenishment of the seed bank could potentially affect the amount of the seed bank that is available for future recruitment efforts.

Overall, it is possible that environmental stochasticity (in the form of extreme weather events) could cause stress to Eureka Valley evening-primrose and Eureka dune grass. However, the best available information at this time does not indicate the current and projected future impacts associated with stochastic events would rise to the level that the long-term persistence of Eureka Valley evening-primrose and Eureka dune grass would be impacted.

With regard to genetic stochasticity, low genetic diversity may affect the ability of plant species to adjust to novel or fluctuating environments, survive stochastic events, or maintain high levels of reproductive performance (Huenneke 1991, p. 40). Although Bell (2003, p. 6) concluded that there was low genetic diversity within and among the three populations of Eureka dune grass, there is no past information available regarding the level of genetic diversity within and among the three populations of Eureka dune grass, which would allow us to determine if genetic diversity has changed over time. Additionally, the best available information does not indicate any low genetic diversity within and among the Eureka Valley evening-primrose populations. Consequently, we conclude that genetic stochasticity does not pose a threat to Eureka dune grass or Eureka Valley evening-primrose currently or in the future.

Combination of Factors

A species may be affected by more than one threat in combination (Brook *et al.* 2008). Within the preceding review of the potential impacts to Eureka Valley evening-primrose and Eureka dune grass, we identified multiple potential impacts that may have interrelated impacts that stress one or both species. For example, during years with favorable climatic conditions (such as increased rainfall), food sources (such as plant parts and seeds) become more abundant and may lead to an increase in small mammal populations (Hoffmann 1958, pp. 79109; Johnson and Peek 1984, pp. 8–9; Anderson and Shumar 1986, p. 154; Krebs 1996, pp. 824). However, environmental stochasticity (such as short-term drought) could lead to a decrease in food sources, and the small mammal activity may increase in those areas with remaining vegetation. Further, the stress from increased seed predation, herbivory, or climate change, either singularly or in combination, may reduce the reproductive vigor of Eureka Valley evening-primrose and Eureka dune grass (for example, Dangremond *et al.* 2010, pp. 2261–2270). The species' productivity may be reduced because of these stressors, either singularly or in combination. However, without further study, it is difficult to determine (nor is it necessarily determinable) whether a particular impact is having the greatest effect on the viability of the species, or whether it is exacerbated by or working in combination with other impacts to have cumulative or synergistic effects on the species. While the combination of factors could potentially impact Eureka Valley evening-primrose and Eureka dune grass, the best available information does not indicate that the magnitude or extent of cumulative or synergistic effects is impacting either species to the point that they are affecting the viability of the species at this time or into the future (although the available information indicates some

uncertainty about how synergistic effects could impact both species in the future).

Finding

An assessment of the need for a species' protection under the Act is based on whether a species is in danger of extinction or likely to become so because of any of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) Overutilization for commercial, recreational, scientific, or educational purposes; (C) Disease or predation; (D) The inadequacy of existing regulatory mechanisms; or (E) Other natural or manmade factors affecting its continued existence. As required by section 4(a)(1) of the Act, we conducted a review of the status of these plants and assessed the five factors to evaluate whether Eureka Valley evening-primrose and Eureka dune grass are endangered or threatened throughout all of their ranges. We examined the best scientific and commercial information available regarding the past, present, and future threats faced by the species. We reviewed information presented in the 2010 petition, information available in our files and gathered through the status review initiated with our 90-day finding in response to this petition, additional information that became available since the time our 2007 5-year status reviews were completed, and other available published and unpublished information. We also consulted with species experts and land management staff with Death Valley National Park who are actively managing for the conservation of Eureka Valley evening-primrose and Eureka dune grass.

For the purposes of this discussion, we note that the implementation timeline of Death Valley National Park's Wilderness and Backcountry Stewardship Plan (Park Service 2013b) is 20 years. We think this is an appropriate timeframe over which events or effects reasonably can or should be anticipated, or trends extrapolated, because it is the length of time that the Park has planned for managing the habitat of these species, and during which time the Park will be monitoring the status of the populations. Although we expect threats to be managed for at least the length of this timeframe, we expect management of the Eureka Dunes to continue well into the future beyond 20 years. Based on the Park Service's track record for natural resource management and revisions to management plans, we can reasonably expect revisions of management plans to incorporate protective management consistent with the needs of both species well into the future and beyond the existing 20-year stewardship plan timeframe described above. We expect future revisions to be consistent with laws, regulations, and policies governing Federal land management planning; however, we cannot predict the exact contents of future plans. For additional information used to determine foreseeable future for these species, see the discussion of the Park Service's responsibilities and a description of Death Valley National Park's Wilderness and Backcountry Stewardship Plan in the ''Recovery'' and ''Factor D'' sections of the Background Information document (Service 2014, pp. 32–38, 48–51).

In considering what factors might constitute threats, we must look beyond the mere exposure of the species to the factor to determine whether the exposure causes actual impacts to the species. If there is exposure to a factor, but no response, or only a positive response, that factor is not a threat. If there is exposure and the species responds negatively, the factor may be a threat and we then attempt to determine how significant the threat is. If the threat is significant, it may drive, or contribute to, the risk of extinction of the species such that the species warrants listing as endangered or threatened as those terms are defined by the Act. This does not necessarily require empirical proof of a threat. The combination of exposure and some corroborating evidence of how the species is likely impacted could suffice. The mere identification of factors that could impact a species negatively is not sufficient to compel a finding that listing is appropriate; we require evidence that these factors are operative threats that act on the species to the point that the species meets the definition of endangered or threatened under the Act.

Significant impacts to Eureka Valley evening-primrose and Eureka dune grass populations at the time of listing (i.e., OHV activity, and to a lesser extent camping and unauthorized OHV activity) that could have resulted in the extirpation of all or parts of populations have been eliminated or reduced to the extent that they are considered negligible currently, and are expected to continue to be negligible into the future. We also conclude that the previously recognized potential impacts and those identified in this document for both species either have been ameliorated, are negligible, or do not rise to a level of significance, either individually or in combination, such that either species is in danger of extinction throughout its range. We came to this conclusion based on our evaluation of the following potential impacts: The present or threatened destruction, modification, or curtailment of its habitat or range (i.e., unauthorized OHV activity, other unauthorized recreational activities (specifically, horseback riding, sandboarding, campgrounds, and access routes)) (Factor A); overutilization for commercial, recreational, scientific, or educational purposes (Factor B); disease or predation (specifically, herbivory and seed predation) (Factor C); the inadequacy of existing regulatory mechanisms (Factor D); and other natural or human-made factors affecting its continued existence (specifically, other unauthorized recreational activities (i.e., horseback riding, sandboarding, camping, and access routes), competition with Russian thistle, climate change, and stochastic events) (Factor E).

Of the factors identified above, herbivory, seed predation, stochastic events, climate change, and (specifically for Eureka Valley evening-primrose) competition with Russian thistle during years the thistle is abundant have the potential to impact Eureka Valley evening-primrose and Eureka dune grass currently or into the foreseeable future. However, we found that the best available information does not indicate that these stressors are impacting individual populations or each species as a whole across their ranges to the extent that they are of sufficient imminence, intensity, or magnitude to rise to the level of a threatened species (i.e., likely to become an endangered species within the foreseeable future). We came to this conclusion primarily due to the best available information indicating a negligible impact or lack of impact to the species across their ranges, although some may be causing stress to portions of populations within the range of one or both species (e.g., documented herbivory and seed predation at the north end of the Eureka Dunes). Although some of these impacts may continue to cause stress to either or both species, the existing regulatory mechanisms are sufficient to manage the continued existence of Eureka Valley evening-primrose and Eureka dune grass currently and into the foreseeable future.

Finally, it is important to acknowledge the significant commitment made initially by BLM and subsequently by the Park Service in their efforts to provide permanent protection to Eureka Valley evening-primrose and Eureka dune grass and their habitat, as well as ongoing

management, research, and public outreach opportunities.

In conclusion, we have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by Eureka Valley evening-primrose and Eureka dune grass. After review and analysis of the information regarding threats as related to the five statutory factors, we find that the ongoing threats are not of sufficient imminence, intensity, or magnitude to indicate that these species are presently in danger of extinction throughout all of their ranges. Additionally, no threats exist currently nor are any potential stressors described herein expected to rise to the level that would likely cause either species to become endangered in the foreseeable future throughout all of their ranges.

Significant Portion of the Range

Having examined the status of Eureka Valley evening-primrose and Eureka dune grass throughout all of their ranges, we next examine whether either species could be in danger of extinction, or likely to become so within the foreseeable future, in a significant portion of their ranges. The range of a species can theoretically be divided into portions in an infinite number of ways. However, there is no purpose in analyzing portions of the range that have no reasonable potential to be significant or in analyzing portions of the range in which there is no reasonable potential for the species to be endangered or threatened. To identify only those portions that warrant further consideration, we determine whether there is substantial information indicating that: (1) The portions may be ''significant'' *and* (2) The species may be in danger of extinction there or likely to become so within the foreseeable future. Depending on the biology of the species, its range, and the threats it faces, it might be more efficient for us to address the significance question first or the status question first. Thus, if we determine that a portion of the range is not ''significant,'' we do not need to determine whether the species is endangered or threatened there; if we determine that the species is not endangered or threatened in a portion of its range, we do not need to determine if that portion is ''significant.'' In practice, a key part of the determination that a species is in danger of extinction in a significant portion of its range is whether the threats are geographically concentrated in some way. If the level of threats to the species is essentially uniform throughout its range, no portion is likely to warrant further consideration.

We consider the ''range'' of Eureka Valley evening-primrose and Eureka dune grass to include three populations each, all encompassed within the three dune systems (Marble Canyon Dunes, Saline Spur Dunes, and the Eureka Dunes) that span a distance of 9 mi (14.4 km) from west to east within Eureka Valley in Death Valley National Park, Inyo County, California. The three populations of each species have likely been present since the beginning of the Holocene era when pluvial lakes retreated during a warming phase, leaving behind the dune systems in Eureka Valley. Historical distribution of Eureka Valley evening-primrose and Eureka dune grass beyond the three currently recognized populations of each species is unknown. In other words, the current distribution of both species is the only known distribution, which has remained generally the same since their distributions were first recorded in 1976.

We considered whether the factors that could cause stress to Eureka Valley evening-primrose and Eureka dune grass individuals or to the populations as a whole might be different at any one of the populations relative to each other. The factors we identified that could still cause stress to both species include: Herbivory, seed predation, stochastic events, climate change, and (specifically for Eureka Valley evening-primrose) competition with Russian thistle during years the thistle is abundant. There are two characteristics of the habitat for these species that could influence the extent to which these factors cause stress to either species: (1) The type of dune system that supports each of the populations, and (2) The extent of the sandy dune habitat that supports each of the populations (please see the ''Environmental Setting'' section of the Background Information document (Service 2014, pp. 4–7) for more information). We compare the three dunes to each other as follows.

TABLE 1—COMPARISON OF DUNE HABITAT CHARACTERISTICS AT THREE DUNE SYSTEMS IN EUREKA VALLEY

Dune system	Type of dune system	Extent of dune habitat (acres (ac) (hectares (ha))
1. Marble Canyon Dunes	Obstacle dune	610 ac (247 ha).
2. Saline Spur Dunes	Obstacle dune	238 ac (96 ha).
3. Eureka Dunes	Sand mountain/Transverse	2,003 ac (811 ha).

The type of dune system is important because of the way each of them intercepts, stores, and delivers moisture (from precipitation) to a plant at critical times in its life cycle, specifically during seed germination (needs moisture closer to the surface where the seeds are), and during growth (needs moisture deeper below the surface where the roots are). As Park Service monitoring over the last 5 years indicates, a ''good'' year for Eureka Valley evening-primrose or Eureka dune grass at one dune system is not necessarily a ''good'' year for either species at another dune system. Although the mechanisms are complex and not entirely understood, it is likely that obstacle dunes have little capacity to store water, and thus intercept and deliver moisture over a shorter period of time. In comparison, the sand mountain type of dune system has a greater capacity to store water, and to deliver moisture to plants over a longer period of time. Therefore, if rainfall were abundant and equal at all three dune systems, the Eureka Dunes would provide an inherent advantage relative to Marble Canyon Dunes and Saline Spur Dunes, with respect to the ability of the dune system to provide sustained moisture for germination and growth of Eureka Valley evening-primrose and Eureka dune grass.

The extent of dune habitat is important because, if rainfall were abundant and equal at all three dune systems, the greater extent of dune habitat would provide more space for Eureka Valley evening-primrose and Eureka dune grass to germinate and grow than at Marble Canyon Dunes and Saline Spur Dunes. While not every hectare of each dune provides suitable conditions for germination and growth of Eureka Valley evening-primrose and Eureka dune grass, a comparison of the

extent of dune habitat is still a useful relative measure of potentially suitable habitat: Eureka Dunes is over three times as large as Marble Canyon Dunes, and eight times as large as Saline Spur Dunes. Thus, if rainfall were abundant and equal at all three dune systems, Eureka Dunes provides an inherent advantage to Eureka Valley evening-primrose and Eureka dune grass relative to Marble Canyon Dunes and Saline Spur Dunes, both with respect to type of dune system and extent of dune habitat, and would theoretically support the largest population of each species.

The factors we identified that could cause stress to Eureka Valley evening-primrose and Eureka dune grass currently or in the future are herbivory, seed predation, stochastic events, climate change, and (specifically for Eureka Valley evening-primrose) competition with Russian thistle during years the thistle is abundant. All of these factors are known to cause stress in plant species; the extent to which they cause stress to Eureka Valley evening-primrose or Eureka dune grass has not been studied in detail. Stress in plant populations can manifest in many forms, ranging from death of individuals to reduced vigor and growth of individuals to reduced reproductive success. In general, small plant populations are more vulnerable than large plant populations to factors that cause stress because there are fewer numbers of individuals to act as a ''reserve'' from which the species can recover. Moreover, once populations become small because of stress caused by one factor, they are more vulnerable to stress caused by other factors, hence the ''combination of factors'' phenomenon as discussed under the Summary of Factors Affecting the Species section. The best available information indicates that the factors that cause stress could be equally present at all three dunes.

Because Marble Canyon Dunes and Saline Spur Dunes are obstacle dunes with less water-holding capacity than Eureka Dunes and comprise a smaller extent of dune habitat than Eureka Dunes, they likely will, over time (under conditions of abundant and equal rainfall), support smaller populations of Eureka Valley evening-primrose and Eureka dune grass than Eureka Dunes. Furthermore, these smaller populations could be more vulnerable to factors that cause stress than the population at Eureka Dunes; therefore, the level of stress to which populations at Marble Canyon Dunes and Saline Spur Dunes are subjected could be higher than the level of stress to which the populations at Eureka Dunes are subjected. However, the best available data at this time do not indicate a higher level of stress at any of the populations/dunes as compared to other populations/dunes. In addition, we think that the three dune systems are close enough in proximity to each other that:

(1) For Eureka Valley evening-primrose, given its abundant seed production in favorable years, migration of propagules from areas of higher concentration to areas of lower concentration likely mitigates for the increased vulnerability of the populations at Marble Canyon Dunes and Saline Spur Dunes as compared to Eureka Dunes (Pavlik and Barbour 1985, pp. 24–53; and see discussion on seed dispersal and metapopulations in Cain *et al.* 2000, p. 1,220).

(2) For Eureka dune grass, given its modest seed production in favorable years and longevity of established individuals, migration of Eureka dune grass propagules from areas of higher concentration to areas of lower concentration over time likely mitigates for the increased vulnerability of the populations at Marble Canyon Dunes and Saline Spur Dunes as compared to Eureka Dunes (Pavlik and Barbour 1985, pp. 24–53; and see discussion on seed dispersal and metapopulations in Cain *et al.* 2000, p. 1,220).

Therefore, it is our conclusion, based on our evaluation of the factors that cause stress to Eureka Valley evening-primrose and Eureka dune grass at the three populations where each occurs, that the factors that cause stress are neither sufficiently concentrated nor of sufficient magnitude to indicate that the species is in danger of extinction, or likely to become so within the foreseeable future, at any of the areas that support populations of either species.

In conclusion, we have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by Eureka Valley evening-primrose and Eureka dune grass. After review and analysis of the information regarding threats as related to the five statutory factors, we find that the ongoing threats are not of sufficient imminence, intensity, or magnitude to indicate that these species are presently in danger of extinction throughout all or a significant portion of their ranges. Additionally, no threats exist currently nor are any potential stressors described herein expected to rise to the level that would likely cause either species to become endangered in the foreseeable future throughout all or a significant portion of their ranges.

Accordingly, we find that the petitioned action is warranted, that Eureka Valley evening-primrose and Eureka dune grass no longer meet the Act's definition of an endangered species and further do not meet the Act's definition of a threatened species, and we propose to remove both species from the Federal List of Endangered and Threatened Plants.

Effects of This Rule

If finalized, the proposed action would remove Eureka Valley evening-primrose and Eureka dune grass from the List of Endangered and Threatened Plants. The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to all endangered plants. The prohibitions under section 9(a)(2) of the Act make it illegal for any person subject to the jurisdiction of the United States to import or export any such species; transport any such species in interstate or foreign commerce in the course of a commercial activity; sell or offer for sale any such species in interstate or foreign commerce; remove and reduce to possession or maliciously damage or destroy any such species from areas under Federal jurisdiction; or remove, cut, dig up, or 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. Section 7 of the Act requires that Federal agencies consult with us to ensure that any action authorized, funded, or carried out by them is not likely to jeopardize the continued existence of a listed species. If Eureka Valley evening-primrose and Eureka dune grass are removed from the List of Endangered and Threatened Plants, these prohibitions would no longer apply. Delisting Eureka Valley evening-primrose and Eureka dune grass is expected to have no or positive effects in terms of management flexibility to the State and Federal governments. We fully expect that the Park Service would continue to implement its management plans consistent with existing laws, regulations, and policies to conserve Eureka Valley evening-primrose and Eureka dune grass and their habitat. However, we note that funding to carry out monitoring to track these species could be curtailed dependent on Federal budget constraints (Cipra and Fuhrmann 2013).

Future Conservation Measures

Section 4(g)(1) of the Act requires us, in cooperation with the States, to implement a system to monitor effectively for not less than 5 years the

status of all species that have been recovered and delisted. The purpose of this requirement is to develop a program that detects the failure of any delisted species to sustain itself without the protective measures provided by the Act. If at any time during the monitoring period, data indicate that protective status under the Act should be reinstated, we can initiate listing procedures, including, if appropriate, emergency listing. The management practices of, and commitments by, the Park Service under existing laws, regulations, and policies should afford adequate protection to Eureka Valley evening-primrose and Eureka dune grass into the foreseeable future upon delisting, as the entire known ranges of these species occur within Death Valley National Park.

We will work cooperatively with the National Park and other interested parties (prior to delisting should it occur) to develop a strategy to implement appropriate monitoring activities for Eureka Valley evening-primrose and Eureka dune grass for not less than 5 years. The results of such monitoring, if not consistent with a recovered status for one or both species, could trigger additional management actions, trigger additional or extended monitoring, or trigger status reviews or listing actions. We anticipate coordinating with the Park Service, USGS, local universities, and other sources that may be able to contribute funding or resources to assist us in our efforts to monitor these species, thereby providing the information necessary to determine whether protections under the Act should be reinstated. We currently appreciate any information on what should be included in a post-delisting monitoring strategy for these species (see Information Requested section, above).

Given the mission of the Park Service and its past and current stewardship efforts, it is important to note that management for both Eureka Valley evening-primrose and Eureka dune grass has been effective to date, and it is reasonable to expect that management will continue to be effective for both species and their habitat beyond a post-delisting monitoring period, the 20-year timeframe associated with the Wilderness and Backcountry Stewardship Plan (Park Service 2013b), and well into the future. In addition to post-delisting monitoring activities that would occur if this proposed rule becomes final, the Park Service anticipates continuing to manage the Eureka Valley dunes, including such tasks as conducting ranger patrols, maintaining educational signs, and making contact with visitors within the range of the species (Cipra *in litt.* 2013). Additional monitoring or research (beyond post-delisting monitoring requirements) may occur in the future for these and other rare endemics within the Park based on congressional funding and resource levels (Cipra *in litt.* 2013). We will work closely with the Park Service to ensure post-delisting monitoring is conducted if these species are delisted and to ensure future management strategies are implemented (as warranted) to benefit Eureka Valley evening-primrose and Eureka dune grass.

Required Determinations

Clarity of the Rule

We are required by Executive Orders 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rulemaking documents in plain language. This means that each rulemaking we publish must:

(a) Be logically organized;

(b) Use the active voice to address readers directly;

(c) Use clear language rather than jargon;

(d) Be divided into short sections and sentences; and

(e) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in the **ADDRESSES** section. To better help us revise the proposed rule, your comments should be as specific as possible. For example, you should tell us the names of the sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.

National Environmental Policy Act

We determined we do not need to prepare an environmental assessment or an environmental impact statement, as defined under the authority of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*), in connection with regulations adopted pursuant to section 4(a) of the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

A complete list of all references cited in this proposed rule is available on the Internet at *http://www.regulations.gov* under Docket No. FWS–R8–ES–2013–0131 or upon request from the Deputy Field Supervisor, Ventura Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

Author

The primary author of this proposed rule is the Pacific Southwest Regional Office in Sacramento, California, in coordination with the Ventura Fish and Wildlife Office in Ventura, California (see **FOR FURTHER INFORMATION CONTACT**).

Lists of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Proposed Regulation Promulgation

Accordingly, we propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

■ 1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 1531–1544; 4201–4245, unless otherwise noted.

§ 17.12 [Amended]

■ 2. Amend § 17.12(h) by removing the entries for *Oenothera avita* ssp. *eurekensis* and *Swallenia alexandrae* under FLOWERING PLANTS from the List of Endangered and Threatened Plants.

Dated: February 19, 2014.

Stephen Guertin,

Acting Director, Fish and Wildlife Service.

[FR Doc. 2014–04232 Filed 2–26–14; 8:45 am]

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